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PRODUCT SPECIFICATION DOCUMENTATION STANDARD AND DATA ITEM DESCRIPTIONS (DID)

VOLUME OF THE

INFORMATION SYSTEM LIFE-CYCLE AND DOCUMENTATION STANDARDS

Release 4.3

2/28/89

NASA
Office of Safety, Reliability, Maintainability, and Quality Assurance
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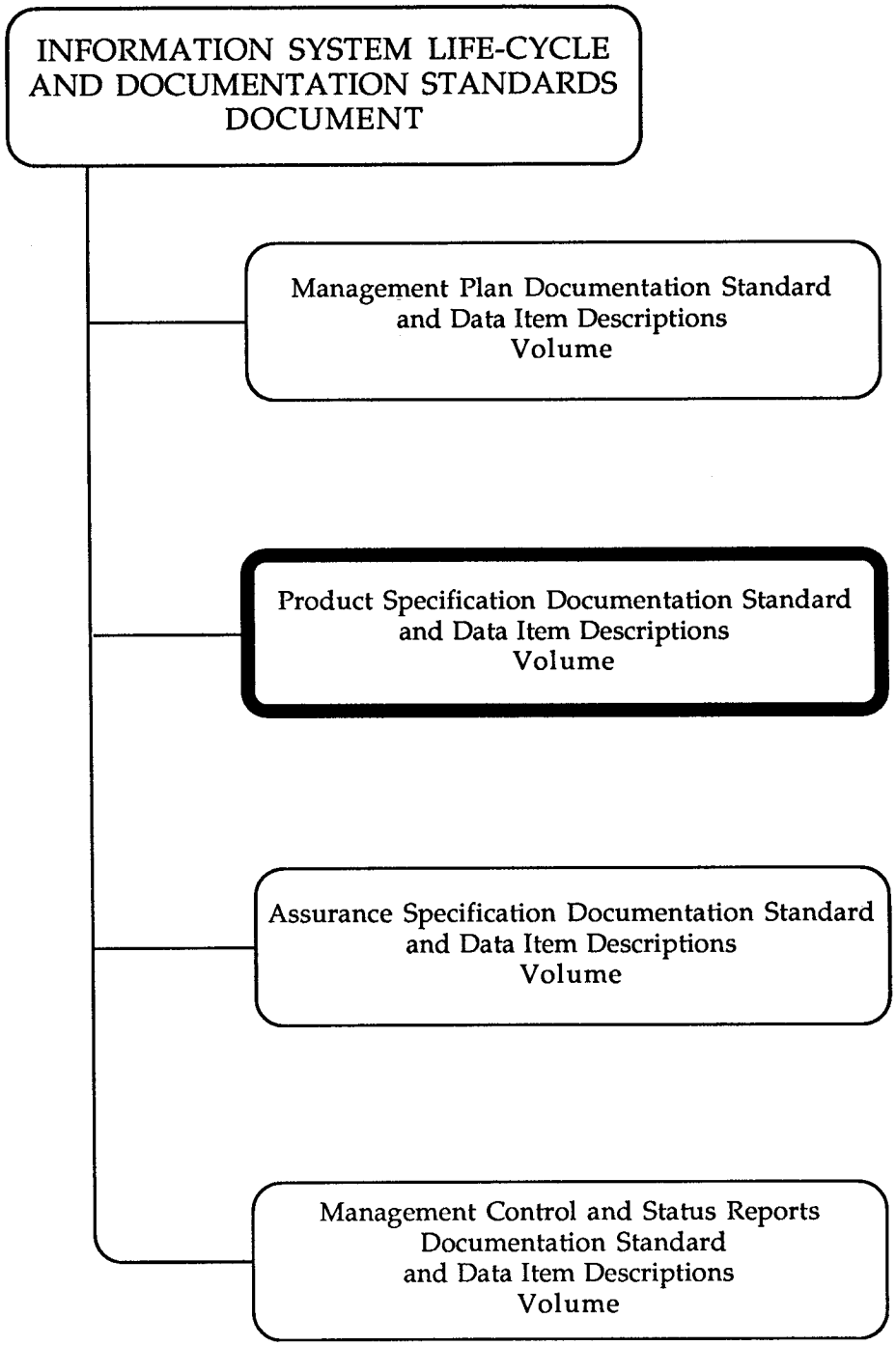

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This document incorporates the extensive work of Dr. E. David Callender and Ms. Jody Steinbacher in specifying the documentation standards for information systems and their components. Their contributions are reflected especially in the concept and definition of the information system, the identification of the major categories of documentation, the definition and application of the roll-out concept, the specification of documentation frameworks, the concept of nested life-cycles for components of information systems, and the description of the relationship between information system acquirers and providers.

They have advanced the state-of-the-art for information systems life-cycle management by establishing simplifying principles for identifying needed documentation units to fit a particular system's environment and organization.

PRODUCT SPECIFICATION DOCUMENTATION STANDARD

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD

1.0 INTRODUCTION

1.1 Identification of Volume

This is the Product Specification Documentation Standard and Data Item Descriptions Volume rolled-out from the Information System Life-Cycle and Documentation Standards.

1.2 Scope of Volume

A product specification contains all technical information for specifying and documenting an information system or a hardware, software, or operational procedures component. This volume states the SMAP documentation standard for a product specification document applicable to all NASA information systems and software, hardware, and operational procedures components and related processes.

The selection, adaptation, and enforcement of these documentation standards is the responsibility of the cognizant program/project manager.

IT IS ASSUMED WITHIN THIS VOLUME THAT THE READER OF THIS STANDARD IS FAMILIAR WITH THE TERMS AND CONTENTS OF THE PARENT VOLUME CONCERNING INFORMATION SYSTEM LIFE-CYCLE AND DOCUMENTATION STANDARDS.

1.3 Purpose and Objectives of Volume

The purpose of this volume is to provide a well organized, easily used standard for providing technical information needed for developing information systems and software, hardware, and operational procedures components and related processes.

1.4 Volume Status and Schedule

Release 4.2C was the first complete release for Version 4 of the Information System Life-Cycle and Documentation Standards document. All five volumes of the document underwent a SMAP and agency review. Release 4.3 is an update to Release 4.2C based on the approved RIDs from this review. The RID review board determined that change bars will not be used to show the differences between Releases 4.2C and 4.3, as 4.3 is the first baselined release of the Version 4 standards.

1.5 Volume Organization and Roll-Out

Sections 1 and 2 of this volume identify it, describe its purpose, and cite other documents affecting it. Section 3 provides the rationale and scope for this documentation standard. Section 4 presents the actual standard and related rules for product specification documentation and illustrates the roll-out concept. Section 5 offers guidelines for applying the standard to the needs of a particular application and organizational environment. Section 6 proposes means for assuring and enforcing the standard.

The Data Item Descriptions (DIDs) for a product specification are contained in Section 7 of this volume.

Section 8 contains a list of abbreviations and acronyms, and Section 9 a glossary. Section 10 is available for notes. Section 11 contains five appendices showing sample outlines for complete product specifications written as single volumes for an information system, a hardware component, a software component, and an operational procedures component, and also for the development of new standards.

2.0 RELATED DOCUMENTATION

2.1 Parent Documents

The following document is the parent of this volume:

1) Information System Life-Cycle and Documentation Standards, Release 4.3, 2/28/89. Washington: NASA Office of Safety, Reliability, Maintainability, and Quality Assurance.

2.2 Applicable Documents

The following volumes/documents are referenced herein and are directly applicable to this document:

1) Management Plan Documentation Standard and Data Item Descriptions (DID) Volume of the Information System Life-Cycle and Documentation Standards, Release 4.3, 2/28/89. Washington: NASA Office of Safety, Reliability, Maintainability, and Quality Assurance.

2) Assurance Specification Documentation Standard and Data Item Descriptions (DID) Volume of the Information System Life-Cycle and Documentation Standards, Release 4.3, 2/28/89. Washington: NASA Office of Safety, Reliability, Maintainability, and Quality Assurance.

3) Management Control and Status Reports Documentation Standard and Data Item Descriptions (DID) Volume of the Information System Life-Cycle and Documentation Standards, Release 4.3, 2/28/89. Washington: NASA Office of Safety, Reliability, Maintainability, and Quality Assurance.

4) IEEE Standard Glossary of Software Engineering Terminology. ANSI/IEEE Std 729-1983. New York: Institute of Electrical and Electronic Engineers, Inc.

2.3 Information Documents

The following documents, although not directly applicable, are referenced for historical continuity:

1) Military Standard for Defense System Software Development, DoD-STD-2167, 4 June 1985, and DoD-STD-2167A, 27 October 1987.

2) NASA Software Data Item Descriptions, Version 3, November 1986. Washington: NASA Office of Safety, Reliability, Maintainability, and Quality Assurance. (Additional Data Item Descriptions were published as Versions 3.1 - 3.5 in

1987.)

3) Space Station Program Software Management Policies, November 1986.

4) Information Processing Resources Management, NHB 2410.1D, April 1985.

3.0 OVERVIEW OF THE PRODUCT SPECIFICATION DOCUMENTATION STANDARD

3.1 Scope of Standard

The SMAP Product Specification Documentation Standard is applicable to all NASA information systems and their software, hardware, and operational procedures components.

The selection, adaptation, and enforcement of these documentation standards is the responsibility of the cognizant program/project manager.

It is important to note that these documentation standards are not management, technical and engineering, or assurance standards. However, the life-cycle and documentation standards provide the mechanism to document the selected activities and related specifications supporting any management, technical and engineering, or assurance standards.

3.2 Rationale for Standard

The rationale for the documentation structure presented in this standard is to provide visibility and to allow management to assign responsibility for the generation of such documentation.

As specified by the Information System Life-Cycle and Documentation Standards, the documentation set for each information system and component consists of:

1) a management plan
2) a product specification
3) an assurance specification
4) a management control and status reports document

An assumption upon which the SMAP documentation standard is based is that it is the responsibility of program/project management to decide what information is to be formally recorded. The documentation standard merely indicates the organization for such information.

The function of the product specification documentation standard is to provide a uniform and effective method for correlating, integrating, and presenting all technical and product information for an information system and software, hardware, and operational procedures components.

Because the management plan may include the development of support products such as standards or a facility on which to conduct prototyping, the product specification and other documents in this standard may be used for the development of

products needed to support the development of an information system or component.

3.3 Interface With Other Standards

This documentation standard is derived from the NASA Version 3 software standards maintained by NASA Headquarters Code Q, Office of Safety, Reliability, Maintainability and Quality Assurance.

This documentation standards volume is one of four that augment and detail the life-cycle standards for information systems specified in the parent document. The other three documentation standards volumes are referenced in Section 2.2.

4.0 THE PRODUCT SPECIFICATION DOCUMENTATION STANDARD

The product specification documentation standard describes the format and content of all technical product specifications at a single node in an information system's decomposition tree. (For more information on system decomposition, refer to the Information System Life-Cycle and Documentation Standards.)

4.1 Product Specification Structure

The structure for a product specification is illustrated in Figure 4-1. The structures for information system and component product specifications are similar, differing only to the extent necessary to encompass the unique activities for an information system or component.

The purpose of this structure is to relate individual elements of technical and product information to each other and to integrate them all into a coordinated whole. The structure also provides a mechanism for partitioning the product specification document into multiple volumes when necessary.

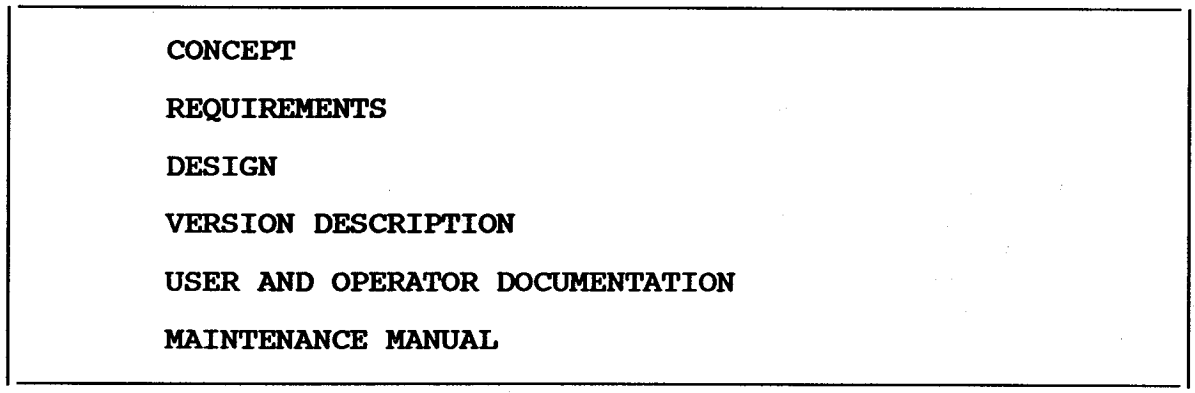

Figure 4-1. Structure for Information System Product Specification

4.2 Responsibility for Preparation of the Product Specification

The product specification is prepared in accordance with the management plan for the information system or component. Every management plan reflects an agreement between the acquirer of an information system or component and the providers, including the development provider.

The acquirer's management, engineering, and assurance requirements are specified in the acquisition plan section of the management plan. The developer is responsible for preparing the development plan in response to these requirements. The product specification is then prepared as designated in the development plan section of the management plan. The acquirer may develop the requirements section of the product specification (or a draft thereof) as part of the procurement process.

Each product specification document is prepared for a particular information system or component; i.e., for a node in the system decomposition tree. The physical organization (i.e., roll-out into separate volumes) and content for the product specification document is dependent upon the development effort specified in the management plan for that node.

In addition, a product specification is prepared by the appropriate developer for any support product (such as new standards or a capability for prototyping) being developed.

The product specification includes trades analyses as well as the requirements finally chosen for the information system or component, the design specifications, and the description of the final product.

4.3 Roll-Out Concept and Template

For a small information system or component, it is possible that each document of the documentation set (management plan, product specification, assurance specification, and management control and status reports document) can be written as a single physical volume. However, many information systems and components require that multiple volumes be used for each document. In the case where a documentation set document for an information system or component requires more than one volume, the concept of "roll-out" is employed.

The roll-out concept provides a mechanism whereby sections of the document are packaged as separate volumes. The parent document or volume contains pointers to each of the rolled-out sections. The rolled-out volume contains a pointer back to its parent. This preserves the overall integrity of the documentation set structure while offering the convenience of separately preparing a section of the document. (For convenience of packaging and traceability to Version 3, the DIDs for this document are presented in rolled-out format.) The decision on which sections of the document are rolled-out is stated in the management plan by the appropriate manager as identified in Section 4.2.

The Product Specification DIDs for information systems (SMAP-DID-P000-SY), hardware (SMAP-DID-P000-HW), software (SMAP-DID-P000-

SW), and operational procedures (SMAP-DID-P000-OP) are the top level DIDs for this document in the documentation set.

The additional DIDs in Section 7 provide the details for the document content. Each DID consists of: 1) a table of contents and 2) content description.

A separate DID is provided to describe the content of the Product Specification Template DID (SMAP-DID-P999) itself. The standard template (Figure 4-2) is used as part of the roll-out mechanism.

Because the rolled-out volume represents a single section in its parent document or volume, sections 3.0 through N.0 of the rolled-out volume are actually the major subheadings for the section in the parent document or volume.

The Abbreviations and Acronyms section defines all acronyms and abbreviations used within the document or volume. The Glossary section includes definitions of special terms used within the document or volume.

The Notes section is used for supplemental information that is not part of the formal, binding information presented elsewhere in the document or volume.

Appendices are considered to be an integral part of the document or volume. They may be separately page numbered, or included in the pagination for the volume as a whole. They may bear a section number within the overall volume, or may be separately identified.

Figure 4-3 illustrates the section numbering rules that are employed when material in a section is rolled-out into a separate volume.

PRODUCT SPECIFICATION TEMPLATE

1.0 INTRODUCTION

- 1.1 Identification of Volume
- 1.2 Scope of Volume
- 1.3 Purpose & Objectives of Volume
- 1.4 Volume Status & Schedule
- 1.5 Volume Organization & Roll-Out

2.0 RELATED DOCUMENTATION

- 2.1 Parent Documents
- 2.2 Applicable Documents
- 2.3 Information Documents

3.0 thru N.0 SECTIONS OF THE PARENT SPECIFICATION BEING ROLLED-OUT INTO A SEPARATE VOLUME

N+1.0 ABBREVIATIONS AND ACRONYMS

N+2.0 GLOSSARY

N+3.0 NOTES

N+4.0 APPENDICES

Figure 4-2. Product Specification Template.

Figure 4-3. Documentation Tailoring — Roll-Out Example.

4.4 The Product Specification Standard and Rules

All of the standards contained in the parent document (Information System Life-Cycle and Documentation Standards) shall apply to product specifications. This section contains additional rules that are specific to documentation.

For the information system itself, and for each subordinate information system (subsystem) and software, hardware, and operational procedures component identified in the decomposition tree, the following standards shall apply:

1) There shall be a single product specification document consisting of one or more volumes. Product specifications shall exactly follow the outline specified by the DIDs in Section 7.

2) The manager of the development provider shall be responsible for designating the sections to be rolled-out as separate volumes and shall record the structure and content for the product specification in the development plan section of the management plan for the information system or component for which the specification is being prepared.

3) If there are additional product specifications for support products, the responsible developer shall determine the structure and content for the product specification and shall describe them in the appropriate section of the management plan. The plan for assuring each support product shall be described in the appropriate section of the management plan, and assurance specifications, procedures, criteria, and results shall be documented in the appropriate sections of the assurance specification.

4) The following rules shall be applied when generating a product specification:

   a) The roll-out of a section into a separate volume shall follow the standard format specified by the Product Specification Template DID (SMAP-DID-P999) given in Section 7.

   b) The development provider has overall responsibility for the generation of the product specification for the information system or component. This product specification shall be based on requirements allocated from the next higher node in the decomposition tree and any additional requirements specified in the acquisition section of the management plan.

   c) Each rolled-out volume shall be titled as illustrated below. This method supports the standard and enables

one to place the volume in context with its parent(s).

< title of the rolled-out section >
Volume of the
[< parent volume title >
Volume of the]
< documentation set parent title >
Document

Note that the volume entry in brackets ([]) above is to be expanded zero or more times depending on the number of levels of roll-out from the documentation set parent. Additional information may be included on the title page as specified by delivery requirements.

d) When writing the product specification document, the outline specified by the product specification (top level) DID shall be used. If more detailed structuring is needed for a section than that shown in this DID, then the structuring shall follow the detailed, rolled-out, DID(s) for for that section. Additional substructure detail (i.e., below the lowest level DID outline) may be added at the discretion of the author.

   Sections or subsections may be added if needed to convey technical information additional to that specified in the DIDs. Added sections or subsections shall be inserted following those specified in the DIDs.

e) A section shall either:

   - o contain information;
   - o point to a lower level volume rolled-out from this document or volume;
   - o point to another document (e.g., the contract governing the effort) that contains the information appropriate to the section;
   - o be marked TBD (to be determined) if appropriate information is not yet available; or
   - o be marked "Not applicable" or "None."

   If a section is "Not applicable" or "None," then none of its subordinate sections shall appear.

f) The documentation standard designates a unique place for each element of information. The same information shall not be incorporated in more than one place when generating a document or rolled-out volume.

g) The manager responsible for the product specification may roll-out beyond the roll-out structure implied by the DIDs in Section 7 of this volume. In that case the Product Specification Template DID (SMAP-DID-P999) shall be used.

h) Any document that is to be placed under any level of an organization's configuration management shall be compatible with the appropriate electronic formats specified in applicable support environment(s) (such as the SSE and TMIS documentation formats for the Space Station Freedom Program.)

5.0 APPLICATION AND SUPPORT OF THE PRODUCT SPECIFICATION DOCUMENTATION STANDARD

This section provides guidelines for tailoring and using this standard to prepare a product specification or portion thereof.

5.1 Guidelines

The following collection of guidelines is offered to assist in applying this standard.

5.1.1 How to Use the DIDs to Prepare a Product Specification

To prepare a product specification for an information system, start with the Information System Product Specification DID (SMAP-DID-P000-SY). For a software, hardware, or operational procedures component, start with the corresponding Product Specification DID for that component (SMAP-DID-P000-SW, -HW, -OP). (For a support product, select the type of product specification DID on the basis of which is most applicable to the product being developed.)

It is the responsibility of the development manager for that information system or component to determine for the product specification, and record in the development plan section of the management plan:

1) Which sections are relevant and which should be marked "Not applicable" or "None."

2) What level of detail is required for each section.

3) Which sections will be rolled-out as separate volumes.

4) Who will be responsible for the activities covered by a section, and therefore will be also responsible for preparing that section or volume.

Thus the management plan provides overall direction as to the format of the product specification.

The DIDs in Section 7 of this volume are presented in a rolled-out format. If the product specification is to be contained in one volume, then prepare Sections 1, 2, and the Abbreviations and Acronyms, Glossary, Notes, and Appendices sections as specified in the Product Specification Template DID (SMAP-DID-P999). Then, for each section in the Product Specification DID (SMAP-DID-P000 -SY, -SW, -HW, -OP) to be included inline, determine:

a) If the amount of information to be included can be conveyed

in a few paragraphs, without subsections, then do so. However, look over the detailed DID cited in that section of the top level DID to be sure that all appropriate information is included.

b) If the amount or detail of the information to be included warrants use of subsections, then use the structure of the cited detailed DID as the substructure for that section. For example, section 3.0 in the detailed DID shall appear as Section N.1 in the document; Section 4.0 in the detailed DID shall appear as Section N.2 in the document, and so on (where N stands for the corresponding section in the top level DID). Similarly, Section 3.1 in the detailed DID shall appear as Section N.1.1 in the document. See Figure 5-1 for an example of incorporating substructure from detailed DIDs into the inline structure for a section.

   Each document subsection specified in the detailed DID shall be included and shall be prepared in accordance with the rules stated in Section 4 of this documentation standard. If the detailed DID itself cites another detailed DID, it is necessary to follow the structure indicated by the latter DID only if further subsections are required.

c) Additional sections and subsections may be included as described by the rules in Section 4.

If the product specification is to be contained in multiple volumes, then for the sections that are rolled-out into separate volumes, use the appropriate DID in Section 7 or the rules for rolling-out a section.

5.1.2 Roll-Out Factors

Factors influencing a roll-out decision include:

a) When the activities to be accomplished are delegated to another organization, whether internal or external.

b) When the detail occasioned by the complexity of the activities to be accomplished is too great to be described within a single physical volume.

c) When it is desirable to apply configuration management and control to the section separately from other sections because of amount of change expected, time required to review before baselining, etc.

Figure 5-1. Incorporating DID Substructure In-Line.

d) When it is desirable to have a separate volume for each life-cycle phase, and to control its updating separately within that phase.

5.1.3 Documentation Content

Documentation should be as brief and specific as possible while conveying all essential information. To aid in meeting this goal:

a) If a section has subsections, content information should, in general, be contained within the subsections rather than under the section heading. Reserve the use of text under section headings, in cases where detailed information is provided in subsections, for such essentials as:

   - o General explanatory information needed to aid the reader in understanding the detailed information following
   - o Information common to two or more of the subsections following

   Do not write "boilerplate" that does not contain any data of substance; e.g., a list of the topics covered in the subsections, or a promise to "do good things".

b) Avoid redundancy. The hierarchical structure specified by the documentation standard and the DIDs provides a unique place to put each item of information needed, for most cases.

c) Except where required by this standard, do not summarize the content of a rolled-out section in the parent document or volume. The summary might have to be changed each time the rolled-out section is changed.

5.1.4 Transition from Current Data Requirements Lists

During the period of transition while this standard is introduced into an ongoing NASA activity, the following considerations apply.

a) Documents specified by an existing Data Requirements List (DRL) may closely parallel rolled-out sections as described in this documentation standard. When revising the DRL, or if no specific outline is provided, it may be convenient to follow the appropriate DIDs presented in section 7.

b) As an aid to establishing an easily-managed documentation set for an application, if it does not currently exist, it

may be desirable to prepare the top level documentation set document specified by this standard. This document can serve as an index to existing documentation by pointing to the appropriate DRL for each section. This provides then a relationship structure (or documentation tree) for pieces of existing data. More importantly, preparation of the document may highlight gaps in coverage for information needed to manage and produce the information system or component.

5.1.5 Use of a Standards and Procedures Repository

Acquirer and provider managers are responsible for determining the need and establishing a repository for any additional procedures, guidelines, rules, and practices for documentation that are not already defined in an existing repository, (such as the ones maintained for the Space Station Freedom Program by TMIS and the SSE), or a parent information system or component repository. At the manager's discretion, procedural information for minor or unique matters may be included as added subsections in a documentation set document (per rule for additional sections).

Please note that interfaces (such as those between two information systems) are not necessarily standards, but are part of the product specifications' interface requirements and design.

5.2 Tools Supporting the Application and Use of the Documentation Standard

Support environments may provide tools for the application and use of the documentation standard. For example, TMIS and the SSE provide tools for the Space Station Freedom Program that support the documentation standards. Such tools are used when preparing, reviewing, revising, publishing, distributing, and configuration managing documents. Tools are also provided for preparing a WBS and schedules. Tool support of the standards is the responsibility of the program/project.

6.0 ASSURANCE AND ENFORCEMENT OF THE DOCUMENTATION STANDARD

If the SMAP information system life-cycle and documentation standards have been selected as standards by program/project management, then it is the responsibility of the acquiring manager of the information system or component to assure and enforce this documentation standard for all documentation written for that information system or component.

The assurance process is formally addressed in one of two ways:

1) As a quality assurance activity during the phase transition reviews indicated by the information system life-cycle.

2) As explicitly called for within any planning document. (For example, an assurance plan section of the management plan could call for special reviews of individual documents and volumes.)

The information system life-cycle specifies that the initial version of the product specification is to be generated by the end of the information system project concept and initiation phase. This version of the product specification is reviewed at the end of that phase.

The information system life-cycle also specifies that new sections of the product specification are to be prepared and reviewed during later phases of the life-cycle. This life-cycle standard also specifies that a product specification is reviewed as it is updated.

It is the responsibility of the reviewers of any product specification to be familiar with the product specification documentation standard and to question any deviations from this standard.

Because all sections specified in a DID must be included in the document or volume, managers and participants in management reviews can easily verify that all necessary information has been prepared. The structure for the document serves as a gross level checklist.

7.0 DATA ITEM DESCRIPTIONS (DIDS)

This section contains the specifications for the format, outline, and content of the product specification document and of rolled-out sections.

Because presenting the outline for the product specification as a single DID is overwhelming and unmanageable, major sections have been rolled-out into separate DIDs using the standard roll-out template. This provides traceability to Version 3 DIDs and ease of use and packaging. However, if it is desirable to create the product specification as a single document, the detailed table of contents for such a document is presented in the appendices section of this volume.

The number of product specification volumes generated for a specific information system or component need not mirror the number of DIDs presented in this section. Lower-level detailed DIDs provide additional substructure and contain content discussion which should be reviewed even when the content is recorded in-line (i.e., not rolled-out). In general, one would start with the appropriate SMAP-DID-P000 using the guidelines in Section 5. Documentation authors then decide to what level the product specification is to be rolled-out. (If no DID is cited, then additional substructure is at the discretion of the author.)

Tables 7-1 through 7-6 are provided to assist the users of these standards. Table 7-1 contains a listing of the DIDs by DID number (from the Table of Contents). Table 7-2 contains a list of the DIDs by DID title. Table 7-3 depicts the relationships among the product specification DIDs for an information system. Table 7-4 depicts the relationships among the software product specification DIDs; Table 7-5 for the hardware product specification DIDs; and Table 7-6 for the operational procedures product specification DIDs. Each level of indentation in Tables 7-3 through 7-6 reflects an additional level of DID detail and substructure. Tables 7-3 through 7-6 are not to be taken as a roll-out structure for any particular product specification.

The Template DID (SMAP-DID-P999) provides detailed instructions for preparing the sections that are common to the document and all volumes rolled-out from the document. Note that this DID does not itself represent a particular separate document or volume, but is used to generate a volume format for a section that a manager wishes to document in a separate volume.

The four Product Specification DIDs (SMAP-DID-P000-SY, -SW, -HW, -OP) provide outlines for the complete product specification documents for an information system and for a software component, hardware component, or operational procedures component. Major sections of these DIDs point to those DIDs that contain detailed descriptions for the content of those sections.

The detailed DIDs in section 7 may be used as they stand to produce separate volumes of a product specification. If the section represented by a detailed DID is to be presented, instead, as an inline part of a product specification document, then only those sections from 3.0 to (but not including) the Abbreviations and Acronyms section are to be used. (See Section 5.1.1 for further discussion.)

TABLE 7-1. DID Index (Numeric Order).

SMAP-DID-P000-SY	Information System Product Specification DID	27
SMAP-DID-P000-SW	Software Product Specification DID	32
SMAP-DID-P000-HW	Hardware Product Specification DID	37
SMAP-DID-P000-OP	Operational Procedures Product Specification DID	43
SMAP-DID-P100	Concept DID	48
SMAP-DID-P200-SY	Information System Requirements DID	53
SMAP-DID-P200-SW	Software Requirements DID	59
SMAP-DID-P200-HW	Hardware Requirements DID	65
SMAP-DID-P200-OP	Operational Procedures Requirements DID	71
SMAP-DID-P210	External Interface Requirements DID	76
SMAP-DID-P300-SY	Information System Design DID	79
SMAP-DID-P300-OP	Operational Procedures Design DID	83
SMAP-DID-P310-SW	Software Architectural Design DID	86
SMAP-DID-P310-HW	Hardware Architectural Design DID	90
SMAP-DID-P311-SY	Information System External Interface Design DID	94
SMAP-DID-P311-SW	Software External Interface Design DID	97
SMAP-DID-P311-HW	Hardware External Interface Design DID	100
SMAP-DID-P320-SW	Software Detailed Design DID	103
SMAP-DID-P320-HW	Hardware Detailed Design DID	108
SMAP-DID-P321-SW	Software External Interface Detailed Design DID	112
SMAP-DID-P321-HW	Hardware External Interface Detailed Design DID	116
SMAP-DID-P322-SW	(Software) Firmware Support Manual DID	119
SMAP-DID-P400	Version Description DID	124
SMAP-DID-P410-OP	Operational Procedures Manual DID	128
SMAP-DID-P500	User's Guide DID	132
SMAP-DID-P600-SY	Information System Maintenance Manual DID	136
SMAP-DID-P600-SW	Software Maintenance Manual DID	139
SMAP-DID-P600-HW	Hardware Maintenance Manual DID	142
SMAP-DID-P920	Standards and Guidelines DID	145
SMAP-DID-P999	Product Specification Template DID	149

TABLE 7-2. DID Index (Alphabetic Order)

Concept DID	SMAP-DID-P100	48
External Interface Requirements DID	SMAP-DID-P210	76
Hardware Architectural Design DID	SMAP-DID-P310-HW	90
Hardware Detailed Design DID	SMAP-DID-P320-HW	108
Hardware External Interface Design DID	SMAP-DID-P311-HW	100
Hardware External Interface Detailed Design DID	SMAP-DID-P321-HW	116
Hardware Maintenance Manual DID	SMAP-DID-P600-HW	142
Hardware Product Specification DID	SMAP-DID-P000-HW	37
Hardware Requirements DID	SMAP-DID-P200-HW	65
Information System Design DID	SMAP-DID-P300-SY	79
Information System External Interface Design DID	SMAP-DID-P311-SY	94
Information System Maintenance Manual DID	SMAP-DID-P600-SY	136
Information System Product Specification DID	SMAP-DID-P000-SY	27
Information System Requirements DID	SMAP-DID-P200-SY	53
Operational Procedures Design DID	SMAP-DID-P300-OP	83
Operational Procedures Manual DID	SMAP-DID-P410-OP	128
Operational Procedures Product Specification DID	SMAP-DID-P000-OP	43
Operational Procedures Requirements DID	SMAP-DID-P200-OP	71
Product Specification Template DID	SMAP-DID-P999	149
Software Architectural Design DID	SMAP-DID-P310-SW	86
Software Detailed Design DID	SMAP-DID-P320-SW	103
Software External Interface Design DID	SMAP-DID-P311-SW	97
Software External Interface Detailed Design DID	SMAP-DID-P321-SW	112
(Software) Firmware Support Manual DID	SMAP-DID-P322-SW	119
Software Maintenance Manual DID	SMAP-DID-P600-SW	139
Software Product Specification DID	SMAP-DID-P000-SW	32
Software Requirements DID	SMAP-DID-P200-SW	59
Standards and Guidelines DID	SMAP-DID-P920	145
User's Guide DID	SMAP-DID-P500	132
Version Description DID	SMAP-DID-P400	124

TABLE 7-3. Complete DID Set for an Information System Product Specification.

SMAP-DID-P000-SY	Information System Product Specification DID
SMAP-DID-P100	Concept DID
SMAP-DID-P200-SY	Information System Requirements DID
SMAP-DID-P210	External Interface Requirements DID
SMAP-DID-P300-SY	Information System Design DID
SMAP-DID-P311-SY	Information System External Interface Design DID
SMAP-DID-P400	Version Description DID
SMAP-DID-P500	User's Guide DID
SMAP-DID-P600-SY	Information System Maintenance Manual DID

TABLE 7-4. Complete DID Set for a Software Product Specification.

SMAP-DID-P000-SW	Software Product Specification DID
SMAP-DID-P100	Concept DID
SMAP-DID-P200-SW	Software Requirements DID
SMAP-DID-P210	External Interface Requirements DID
SMAP-DID-P310-SW	Software Architectural Design DID
SMAP-DID-P311-SW	Software External Interface Design DID
SMAP-DID-P320-SW	Software Detailed Design DID
SMAP-DID-P321-SW	Software External Interface Detailed Design DID
SMAP-DID-P322-SW	(Software) Firmware Support Manual DID
SMAP-DID-P400	Version Description DID
SMAP-DID-P500	User's Guide DID
SMAP-DID-P600-SW	Software Maintenance Manual DID

TABLE 7-5. Complete DID Set for a Hardware Product Specification.

```
SMAP-DID-P000-HW  Hardware Product Specification DID
   SMAP-DID-P100      Concept DID
   SMAP-DID-P200-HW   Hardware Requirements DID
      SMAP-DID-P210      External Interface Requirements DID
   SMAP-DID-P310-HW   Hardware Architectural Design DID
      SMAP-DID-P311-HW   Hardware External Interface
                            Design DID
   SMAP-DID-P320-HW   Hardware Detailed Design DID
      SMAP-DID-P321-HW   Hardware External Interface
                            Detailed Design DID
   SMAP-DID-P400      Version Description DID
   SMAP-DID-P500      User's Guide DID
   SMAP-DID-P600-HW   Hardware Maintenance Manual DID
```

TABLE 7-6. Complete DID Set for an Operational Procedures Product Specification.

```
SMAP-DID-P000-OP  Operational Procedures Product
                     Specification DID
  SMAP-DID-P100      Concept DID
  SMAP-DID-P200-OP   Operational Procedures
                        Requirements DID
  SMAP-DID-P300-OP   Operational Procedures Design DID
  SMAP-DID-P400      Version Description DID
     SMAP-DID-P410-OP  Operational Procedures Manual DID
  SMAP-DID-P500      User's Guide DID
```

PRODUCT SPECIFICATION DOCUMENT STANDARD
INFORMATION SYSTEM PRODUCT SPECIFICATION DID: SMAP-DID-P000-SY

SMAP-DID-P000-SY

INFORMATION SYSTEM PRODUCT SPECIFICATION

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PRODUCT SPECIFICATION DOCUMENT STANDARD
INFORMATION SYSTEM PRODUCT SPECIFICATION DID: SMAP-DID-P000-SY

EXPLANATORY NOTE

The purpose of an information system product specification is to document the technical aspects relative to the development of the information system. This information is produced over the life-cycle for the information system.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 CONCEPT

The purpose of this section is to provide an overview of the information system. It provides the scope and context in which to read the requirements section.

The primary topics for the concept specification include:

- o Definition and Purpose
- o User Definition
- o Capabilities and Characteristics
- o Sample Operational Scenarios

Refer to the Concept DID (SMAP-DID-P100) for a further description of the structure and content.

4.0 REQUIREMENTS

The purpose of this section is to specify the functional, performance, and interface requirements of the information system. It also specifies the major characteristics and implementation constraints, and the design goals.

The primary topics for the requirements specification include:

- o Requirements Approach and Tradeoffs
- o External Interface Requirements
- o Information System Requirements

- o Traceability to Parent's Design
- o Partitioning for Phased Delivery

Refer to the Information System Requirements DID (SMAP-DID-P200-SY) for a further description of the structure and content for each topic.

5.0 DESIGN

The purpose of the system design section is to record the design rationale, provide an architecture of the major subsystems or components for the information system, and allocate requirements to the architectural components.

The primary topics for the design specification include:

- o Design Approach and Tradeoffs
- o External Interfaces Design
- o Architectural Design
- o Requirements Allocation
- o Traceability to Requirements
- o Partitioning for Incremental Development

Refer to the Information System Design DID (SMAP-DID-P300-SY) for a further description of the structure and content for each topic.

6.0 VERSION DESCRIPTION

The purpose of this section is to describe in detail the configuration and content of the product and instructions for its set-up. For each new release, the section also provides information on the status of changes since previous releases.

The primary topics for the version description include:

- o Changes in Functional Capabilities
- o Set-up Instructions
- o Inventory of Actual Products
- o Change Status
- o Adaptation Data

Refer to the Version Description DID (SMAP-DID-P400) for a further description of the structure and content for each topic.

7.0 USER AND OPERATOR DOCUMENTATION

7.1 User's Guide

The purpose of the user's guide for the information system is to provide end users (as opposed to system operators) with instructions explaining how to employ and execute the functions provided by the system. Users include both human users and interfacing systems. The user's guide documents the actual implementation of the external interfaces (i.e., interfaces for users) as defined in the requirements and design sections. Instructions for operators, on the other hand, are contained in the Operational Procedures Manual that is the product of the operational procedures component (i.e., there is a distinction between operators and users).

The system user's guide may include a compendium of the user's guides for the system's subsystems or components, which can be incorporated via reference.

The primary topics for the User's Guide include:

- o Installation and Initialization
- o Overview of Purpose and Functions
- o Startup and Termination
- o Functions and their Operation
- o Error and Warning Messages
- o Recovery Steps

Refer to the User's Guide DID (SMAP-DID-P500) for a further description of the structure and content under each topic.

7.2 User's Training Materials

The purpose of this section is to document the training materials provided for the users. This is the actual training materials. When media is other than paper hardcopy, describe media and reference the training materials such as video tapes and computer-aided instruction files.

7.3 Operator's Training Materials

The purpose of this section is to document the training materials provided for the operators. (Operators execute the operational procedures of an information system as documented in the Operational Procedures Manual.) These are the actual training materials. When media is other than paper hardcopy, describe media and reference the training materials such as video tapes and computer-aided instruction files.

8.0 MAINTENANCE MANUAL

The purpose of the maintenance manual for the information system is to provide maintenance engineers with information to aid them in maintaining the system. The manual may be a compendium of maintenance manuals for the components augmented with systems aspects. The component maintenance information may be included via reference to their appropriate maintenance manuals. Refer to the Information System Maintenance Manual DID (SMAP-DID-P600-SY) for a further description of the structure and content.

9.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

12.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P000-SW

SOFTWARE PRODUCT SPECIFICATION

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9.0 ABBREVIATIONS AND ACRONYMS

10.0 GLOSSARY

11.0 NOTES

12.0 APPENDICES

PRODUCT SPECIFICATION DOCUMENT STANDARD
SOFTWARE PRODUCT SPECIFICATION DID: SMAP-DID-P000-SW

EXPLANATORY NOTE

The purpose of an software product specification is to document the technical aspects relative to the development of the software. This information is produced over the life-cycle for the software component.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 CONCEPT

The purpose of this section is to provide an overview of the software component. When required, this section provides the scope and context to help in understanding the requirements. Depending upon the system decomposition and the size and complexity of the parent information system or component, this section may not be needed and, therefore, should be marked not applicable.

The primary topics for the concept specification include:

- Definition and Purpose
- User Definition
- Capabilities and Characteristics
- Sample Operational Scenarios

Refer to the Concept DID (SMAP-DID-P100) for a further description of the structure and content.

4.0 REQUIREMENTS

The purpose of this section is to specify and augment, as appropriate, the functional, performance, and interface requirements allocated to this software component from its parent. The section also specifies the major characteristics, implementation constraints, and design goals.

The primary topics for the requirements specification include:

- o Requirements Approach and Tradeoffs
- o External Interface Requirements
- o Software Requirements
- o Traceability to Parent's Design
- o Partitioning for Phased Delivery

Refer to the Software Requirements DID (SMAP-DID-P200-SW) for a further description of the structure and content for each topic.

5.0 DESIGN

5.1 Architectural Design

The purpose of the architectural design is to document the top level, comprehensive design for the software component (which may consist of one or more computer software configuration items), including major external and internal interfaces and logical data schema. In addition, the section should include an explanation of the rationale for the architecture.

The primary topics for the architectural design specification include:

- o Design Approach and Tradeoffs
- o External Interface Design
- o Architecture Design Description
- o Traceability to Requirements
- o Partitioning for Incremental Development

Refer to the Software Architectural Design DID (SMAP-DID-P310-SW) for a further description of the structure and content for each topic.

5.2 Detailed Design

The purpose of this section is to describe the design for the software component in detail sufficient to write the software code to implement it. Detailed design defines the structure and functions of each computer software configuration item down to the computer software unit level.

The primary topics for the detailed design specification include:

- o Detailed Design Approach and Tradeoffs
- o External Interfaces Detailed Design
- o Detailed Design
- o Traceability to Architectural Design

Refer to the Software Detailed Design DID (SMAP-DID-P320-SW) for a further description of the structure and content for each topic.

6.0 VERSION DESCRIPTION

The purpose of this section is to describe in detail the configuration and content of the product and instructions for its set-up. For each new release, the section also provides information on the status of changes since previous releases.

The primary topics for the version description include:

- o Changes in Functional Capabilities
- o Set-up Instructions
- o Inventory and Software Product Identification
- o Change Status
- o Adaptation Data

Refer to the Version Description DID (SMAP-DID-P400) for a further description of the structure and content for each topic.

7.0 USER DOCUMENTATION

7.1 User's Guide

The purpose of the software User's Guide is to provide end users (human and other systems) with instructions on the use of this software component. Because the software is an integral component of an information system, this guide may be prepared as source material for a integrated information system user's guide for the parent information system. (There is also similar applicability if this is a software subcomponent and an integrated parent level software user's guide is desired.) In such cases, then it may be advisable to roll-out this section as a separate volume.

The primary topics for the User's Guide include:

- o Installation and Initialization
- o Overview of Purpose and Functions
- o Startup and Termination
- o Functions and their Operation
- o Error and Warning Messages
- o Recovery Steps

Refer to the User's Guide DID (SMAP-DID-P500) for a further description of the structure and content under each topic.

7.2 User's Training Materials

The purpose of this section is to document the training materials provided for the users. This is the actual training materials. When media is other than paper hardcopy, describe media and reference the training materials such as video tapes and computer-aided instruction files.

8.0 MAINTENANCE MANUAL

The purpose of this section is to provide information and data that aids in analyzing and debugging the software and which is not contained in other documentation.

Refer to the Software Maintenance Manual DID (SMAP-DID-P600-SW) for a further description of the structure and content for each topic.

9.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

12.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P000-HW

HARDWARE PRODUCT SPECIFICATION

DATA ITEM DESCRIPTION

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PRODUCT SPECIFICATION DOCUMENT STANDARD
HARDWARE PRODUCT SPECIFICATION DID: SMAP-DID-P000-HW

EXPLANATORY NOTE

The purpose of a hardware product specification is to document the technical aspects relative to the development of the hardware component. This information is produced over the life-cycle for the hardware component.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 CONCEPT

The purpose of this section is to provide an overview of the hardware component. When required, this section provides the scope and context to help in understanding the requirements. Depending upon the system decomposition and the size and complexity of the parent information system or component, this section may not be needed and, therefore, should be marked not applicable.

The primary topics for the concept specification include:

- Definition and Purpose
- User Definition
- Capabilities and Characteristics
- Sample Operational Scenarios

Refer to the Concept DID (SMAP-DID-P100) for a further description of the structure and content.

4.0 REQUIREMENTS

The purpose of this section is to specify and augment, as appropriate, the functional, performance, and interface requirements allocated to this hardware component from its parent in the decomposition tree. The section also specifies the major characteristics, implementation constraints, and design goals.

The primary topics for the requirements specification include:

- Requirements Approach and Tradeoffs
- External Interface Requirements
- Hardware Requirements
- Implementation Constraints, including Commercial, Inheritable, and Government-Furnished Hardware
- Traceability to Parent's Design

Refer to the Hardware Requirements DID (SMAP-DID-P200-HW) for a further description of the structure and content for each topic.

5.0 DESIGN

5.1 Architectural Design

The purpose of the architectural design is to document the top level, comprehensive design for the hardware component (which may consist of one or more hardware configuration items), including its major external and internal interfaces. In addition, the section should include an explanation of the rationale for the selected architecture.

The primary topics for the architectural design specification include:

- Design Approach and Tradeoffs
- External Interface Design
- Architectural Design Description
- Traceability to Requirements
- Partitioning for Incremental Development

Refer to the Hardware Architectural Design DID (SMAP-DID-P310-HW) for a further description of the structure and content for each topic.

5.2 Detailed Design

The purpose of this section is to describe the design for the hardware component in detail sufficient to fabricate it. Detailed design identifies the assemblies making up each hardware configuration item, and the line replaceable units (LRUs) making up each assembly.

The primary topics for the detailed design specification include:

- Detailed Design Approach
- External Interfaces Detailed Design
- Detailed Design Description

- Traceability to Architectural Design

Refer to the Hardware Detailed Design DID (SMAP-DID-P320-HW) for a further description of the structure and content for each topic.

6.0 VERSION DESCRIPTION

The purpose of this section is to describe in detail the configuration and content of the product and instructions for its set-up. For each new release, the section also provides information on the status of changes since previous releases.

The primary topics for the version description include:

- Changes in Functional Capabilities
- Set-up Instructions
- Inventory and Hardware Product Identification
- Change Status
- Adaptation Data

Refer to the Version Description DID (SMAP-DID-P400) for a further description of the structure and content for each topic.

7.0 USER DOCUMENTATION

7.1 User's Guide

The purpose of the hardware User's Guide is to provide end users (humans and other systems) with instructions on the use of this hardware component. As a hardware component is often an integral component of an information system, this guide may be prepared as source material for a integrated information system user's guide for the parent information system. (There is also similar applicability if this is a hardware subcomponent and an integrated parent level hardware user's guide is desired.) In such cases, then it may be advisable to roll-out this section as a separate volume.

The primary topics for the User's Guide include:

- Installation and Initialization
- Overview of Purpose and Functions
- Startup and Termination
- Functions and their Operation
- Error and Warning Messages
- Recovery Steps

Refer to the User's Guide DID (SMAP-DID-P500) for a further

description of the structure and content under each topic.

7.2 User's Training Materials

The purpose of this section is to document the training materials provided for the users. This is the actual training materials. When media is other than paper hardcopy, describe media and reference the training materials such as video tapes and computer-aided instruction files.

8.0 MAINTENANCE MANUAL

The purpose of this section is to provide information and data that aids in analyzing and debugging the hardware, and which is not contained in other documentation.

The primary topics for the maintenance manual include:

- Problem Detection and Isolation
- Environmental Sensitivity
- Built-in Test Diagnostics

Refer to the Hardware Maintenance Notes DID (SMAP-DID-P600-HW) for a further description of the structure and content for each topic.

9.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

12.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P000-OP

OPERATIONAL PROCEDURES PRODUCT SPECIFICATION

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PRODUCT SPECIFICATION DOCUMENT STANDARD
OPERATIONAL PROCEDURES PRODUCT SPECIFICATION: SMAP-DID-P000-OP

EXPLANATORY NOTE

The purpose of an operational procedures product specification is to document such procedures and associated technical aspects of the procedures. This information is produced over the life-cycle for the operational procedures component.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 CONCEPT

The purpose of this section is to provide an overview of the operational procedures component. When required, this section provides the scope and context to help in understanding the requirements. Depending upon the system decomposition and the size and complexity of the parent information system or component, this section may not be needed and, therefore, should be marked not applicable.

The primary topics for the concept specification include:

- Definition and Purpose
- User Definition
- Capabilities and Characteristics
- Sample Operational Scenarios

Refer to the Concept DID (SMAP-DID-P100) for a further description of the structure and content.

4.0 REQUIREMENTS

The purpose of this section is to specify and augment, as appropriate, the functional, performance, and interface requirements allocated to this operational procedures component from its parent in the decomposition tree. The section also specifies the major characteristics, implementation constraints, and design goals.

The primary topics for the requirements specification include:

- Requirements Approach and Tradeoffs
- External Interface Requirements
- Operational Procedures Requirements
- Traceability to Parent's Design
- Partitioning for Phased Delivery

Refer to the Operational Procedures Requirements DID (SMAP-DID-P200-OP) for a further description of the structure and content for each topic.

5.0 DESIGN

The purpose of this section is to define the scenarios describing the manual operations required for the information system and their interface to software and hardware components.

Refer to the Operational Procedures Design DID (SMAP-DID-P300-OP) for a further description of the structure and content under each topic.

6.0 VERSION DESCRIPTION

The purpose of this section is to describe in detail the configuration and content of the product and instructions for its set-up. For each new release, the section also provides information on the status of changes since previous releases.

The primary topics for the version description include:

- Changes in Functional Capabilities
- Inventory and Operational Procedures Manual
- Change Status

Refer to the Version Description DID (SMAP-DID-P400) for a further description of the structure and content for each topic.

7.0 USER AND OPERATOR DOCUMENTATION

7.1 User's Guide

The purpose of an operational procedures User's Guide is to provide the end users with instruction on interfacing with operators. Because the operational procedures is an integral component of an information system, this guide may be prepared as source material for an integrated information system user's guide for the parent information system. In such cases, then it may be advisable to roll-out this section as a separate volume.

The primary topics included in the manual include:

- o Types of services available
- o Contact points for services

7.2 User's Training Materials

The purpose of this section is to document the training materials provided for the users. This is the actual training materials. When media is other than paper hardcopy, describe media and reference the training materials such as video tapes and computer-aided instruction files.

7,3 Operator's Training Materials

The purpose of this section is to document the training materials provided for the operators. (Operators execute the operational procedures of an information system as documented in the Operational Procedures Manual.) These are the actual training materials. When media is other than paper hardcopy, describe media and reference the training materials such as video tapes and computer-aided instruction files.

8.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

PRODUCT SPECIFICATION DOCUMENT STANDARD
CONCEPT DID: SMAP-DID-P100

SMAP-DID-P100

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PRODUCT SPECIFICATION DOCUMENT STANDARD
CONCEPT DID: SMAP-DID-P100

EXPLANATORY NOTE

The purpose of the concept is to provide an overview of the information system or component. The concept volume should be relatively brief -- certainly fewer than 100 pages, including scenarios. Ideally, the concept should be readable in a single sitting.

The concept provides the context in which to read the requirements section of the product specification for an information system or component. All requirements should be traceable, in a general sense, to the functions or capabilities described in the concept. However, the requirements section (or volume, if the section is rolled-out), is the governing specification for the product.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 DEFINITION OF <INFORMATION SYSTEM OR COMPONENT>

Throughout the presentation of the concept, the term "user" refers both to humans and to interfacing information systems and components.

3.1 Purpose and Scope

Briefly describe the purpose to be served by the information system or component that is the subject of this concept and the scope of its applicability. Describe the primary use(s) of the information system or component within the context of the users' environments.

3.2 Goals and Objectives

Describe the goals (i.e., intentions and desires) for the information system or component, and the objectives (i.e., expectations) for it.

3.3 Description

Provide a top-level description of the information system or component and its major external interfaces to provide a background to aid the reader in understanding what the system or component is to accomplish.

Use appropriate graphics, illustrations, tables, etc. to show functions and inter-relationships.

3.4 Policies

List or reference the policies and standards governing the use and applicability of this information system or component. If there are none, then so state.

4.0 USER DEFINITION

List and describe the expected users of the information system or component, the way in which they will be using the it, and the functional capabilities they will require to perform their activities. The term "user" includes interfacing systems and components. Define the users and their needs explicitly and in such terms and detail as to make it possible to correlate system capabilities and characteristics to specific user needs.

5.0 CAPABILITIES AND CHARACTERISTICS

Describe the major operational capabilities to be provided by the information system or component. Identify which users' needs are supported by each capability. Use a table, matrix or similar graphic presentation if appropriate for the sake of clarity.

Describe significant characteristics required of the information system or component. Possible areas of discussion are:

- Architecture
- Process capabilities
- Data structures
- Performance
- Interfaces
- Error recovery capabilities

- o Reliability
- o Risk criticality
- o Safety and security
- o Maintainability
- o Flexibility and expansion
- o Transportability
- o Quality
- o Adaptation to various operational sites
- o Security
- o Phase implementation

Discuss also:

1) Characteristics of the current and potential physical and organizational environment for the system or component.

2) The general flow of both execution control and data across external interfaces for the system or component, including hardware and networking considerations affecting system or component operation.

If there are major design constraints imposed upon this information system or component, identify and describe each of them.

6.0 SAMPLE OPERATIONAL SCENARIOS

Describe typical operational scenarios for the information system or component. The scenario depicts at a high level how users (including other systems) interact with the capabilities provided by the information system or component being defined. Include at least one scenario for each class or type of user.

A sample scenario would include such matters as:

a) A description of an operation to be performed with support from the information system or component.

b) A description of the interaction between a user and the information system or component in carrying out the operation.

7.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P200-SY

INFORMATION SYSTEM REQUIREMENTS

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
INFORMATION SYSTEM REQUIREMENTS DID: SMAP-DID-P200-SY

EXPLANATORY NOTE

The purpose of the information system requirements is to specify the functional, performance, and interface requirements for an information system. Requirements approach and tradeoff results are described. This section also specifies the major characteristics, implementation constraints, and design goals for the information system.

For the sake of traceability to the lowest level of implementation, each requirement shall be uniquely identified. A hierarchical or other classification scheme may be used to designate requirements that are allocated by groups to higher-level components and functions.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 REQUIREMENTS APPROACH AND TRADEOFFS

Describe the overall approach in gathering, analyzing, and synthesizing requirements, including use of prototyping techniques. Explain the tradeoff process used to analyze conflicting requirements and arrive at the actual specifications for those requirements. Requirements trades and analysis information (such as a prototyping effort report), especially that which must be reevaluated or considered when changes are proposed during development or maintenance, should be included in an appendix or explicitly referenced.

4.0 EXTERNAL INTERFACE REQUIREMENTS

The purpose of this section is similar to that of the traditional interface requirements document; that is, it contains the specification of requirements for interfaces between this information system and its external environment (i.e., all its users including both humans and other systems). This section should be rolled-out when it is desirable to place it under

configuration control as a separate item. When rolled-out, it becomes the external interface requirements volume.

Refer to the External Interface Requirements DID (SMAP-DID-P210) for a further description of the content for this section.

5.0 REQUIREMENTS SPECIFICATION

5.1 Process and Data Requirements

Describe, as a separately numbered item for the sake of traceability, the process and data requirements for the information system in such terms as:

1) Functions:

   - o Input data
   - o Algorithms
   - o Output data
   - o State changes

2) Data:

   - o Definition
   - o Acquisition, storage, retrieval, and dissemination
   - o Relationships

3) System control.

5.2 Performance and Quality Engineering Requirements

Specify, as a separately numbered item for the sake of traceability, each performance requirement for the system. Express the requirement in testable and quantitative terms. Be sure to prioritize these requirements.

1) Address operational requirements such as:

   - o Timing and sizing requirements
   - o Capacity and operational frequency ranges
   - o Response time ranges

2) Describe quality engineering requirements, such as:

   - o Reliability requirements including system failure rate probabilities as well as fault tolerance and recovery in terms of:

     - Recovery to normal operations from anomalous

conditions

- Data protection and recovery

o Maintainability requirements

3) Describe environmental characteristics affecting performance, including transportation, storage, and deployment of the system, such as:

o Natural environment: heat, pressure, moisture, etc.

o Electromagnetic and other forms of radiation, including both those in the natural environment and those generated by the system

o Magnetic environment

o Hostile environment

o Anticipated number of installations and their locations

5.3 Safety Requirements

Specify, as separately numbered items for the sake of traceability, the safety requirements for the information system, including, in a prioritized list, the following:

o System hazard requirements which identifies hazards and potential contributions to system mishaps

o System/user interface considerations from a human factors engineering viewpoint, including information flow, processing analysis, estimates of potential operator/maintainer processing capabilities, and analysis of critical tasks.

5.4 Security and Privacy Requirements

Specify, as separately numbered items for the sake of traceability, the security and privacy requirements for the information system, including access limitations to the system such as existence of logon procedures and passwords, and of data protection and recovery methods. Express each requirement in testable and quantitative terms. Prioritize these requirements.

5.5 Implementation Constraints

Specify any constraints on the design or implementation of this information system. For example, specify whether the design must be based on use (or avoidance) of inheritables, government-furnished equipment (GFE), commercial-off-the-shelf items, or the interface with an existing system.

List or reference engineering and technical standards to be applied in the development of this information system.

5.6 Site Adaptation

Specify requirements for adapting or configuring the information system to the physical environments within which it operates, including site-specific adaptation data such as latitude and longitude, radar ranges, prescribed safety limits, etc. Adaptation requirements may be presented in tabular form.

5.7 Design Goals

When appropriate, describe specific design goals in prioritized order. When possible, criteria for meeting the design goal should be included in the statement. Examples of design goals include:

- Correctness to the degree that the implemented system is to satisfy its requirements
- Reliability of the implemented system to consistently perform its intended function
- Efficiency with which the implemented system is to use computer resources
- Maintainability
- Technology transparency

6.0 TRACEABILITY TO PARENT'S DESIGN

Describe how these requirements map to the requirements allocated from the parent. Use a table for presentation as an aid to clarity, and show both that requirements allocated from the parent have been taken into account and that requirements specified herein can be traced to the parent, or that there is a valid reason for introduction of any new requirements at this level.

7.0 PARTITIONING FOR PHASED DELIVERY

If phased delivery is to be employed in the development of the information system (i.e., each delivery must be acceptance tested), identify the content for each delivery in terms of:

1) Requirements and functions to be satisfied in the initial delivery.

2) Additional requirements and functions to be satisfied for each successive delivery.

Note that incremental development or phased delivery decisions at a higher (parent) level information system may impose phased delivery requirements upon this information system.

8.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P200-SW

SOFTWARE REQUIREMENTS

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6.0 TRACEABILITY TO PARENT'S DESIGN

7.0 PARTITIONING FOR PHASED DELIVERY

8.0 ABBREVIATIONS AND ACRONYMS

9.0 GLOSSARY

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11.0 APPENDICES

PRODUCT SPECIFICATION DOCUMENTATION STANDARD
SOFTWARE REQUIREMENTS DID: SMAP-DID-P200-SW

EXPLANATORY NOTE

The purpose of the software requirements is to specify the functional, performance, and interface requirements for a software component. Requirements approach and tradeoff results are described. This section also specifies the major characteristics, implementation constraints, and design goals for software component.

For the sake of traceability to the lowest level of implementation, each requirement shall be uniquely identified. A hierarchical or other classification scheme may be used to designate requirements that are allocated by groups to higher-level components and functions.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 REQUIREMENTS APPROACH AND TRADEOFFS

Describe the overall approach in gathering, analyzing, and synthesizing requirements, including use of prototyping techniques. Explain the tradeoff process used to analyze conflicting requirements and arrive at the actual specifications for those requirements. Requirements trades and analysis information (such as a prototyping effort report), especially that which must be reevaluated or considered when changes are proposed during development or maintenance, should be included in an appendix or explicitly referenced.

4.0 EXTERNAL INTERFACE REQUIREMENTS

The purpose of this section is similar to that of the traditional interface requirements document; that is, it contains the specification of requirements for interfaces between this software component and its external environment (i.e., all its users including both humans and other systems). This section should be rolled-out when it is desirable to place it under

configuration control as a separate item. When rolled-out, it becomes the External Interface Requirements volume.

Refer to the External Interface Requirements DID (SMAP-DID-P210) for a further description of the content for this section.

5.0 REQUIREMENTS SPECIFICATION

5.1 Process and Data Requirements

Describe, as a separately numbered item for the sake of traceability, the process and data requirements for the software component in such terms as:

1) Functions:

   - o Input data and source
   - o Transactions including algorithms
   - o Output data and destination

2) Data:

   - o Definition
   - o Relationships and structure
   - o Protection requirements
   - o Validity check requirements
   - o Parameterization requirements
   - o Format or implementation restrictions

5.2 Performance and Quality Engineering Requirements

Specify, as a separately numbered item for the sake of traceability, each performance requirement for the software component. Express the requirement in testable and quantitative terms.

1) Address performance requirements such as:

   - o Timing and sizing requirements
   - o Sequence and timing of events, including user interaction tolerances
   - o Throughput and capacity requirements

2) Describe error detection, isolation, and recovery requirements for data and processes.

3) Describe quality engineering requirements such as reliability, maintainability, or portability.

5.3 Safety Requirements

Specify, as separately numbered items for the sake of traceability, the safety requirements for the software, including, in a prioritized list, the following:

- Software hazard requirements which identify hazards and potential contributions to system mishaps
- User interface considerations from a human factors engineering viewpoint, including information flow, processing analysis, estimates of potential operator/ maintainer processing capabilities, and analysis of critical tasks

5.4 Security and Privacy Requirements

Specify, as separately numbered items for the sake of traceability, the security and privacy requirements for the software, including access limitations to the system, such as existence of logon procedures and passwords, and of data protection and recovery methods. Express each requirement in testable and quantitative terms. Prioritize these requirements.

5.5 Implementation Constraints

Describe general implementation constraints on the design and implementation of the software, such as the use of government-furnished equipment (GFE), commercial-off-the-shelf (COTS), or use of specific compilers, etc. If existing software is required to be used or modified, include such requirements here.

List or reference engineering and technical standards to be applied in the development of the software.

5.6 Site Adaptation

Specify requirements for adapting the component to the physical environments within which it operates, including site-specific adaptation data or special parameters that are defined during installation. Adaptation requirements may be presented in tabular form.

5.7 Design Goals

State design goals for the software in terms of:

- o Correctness to the degree that the implemented system is to satisfy its requirements
- o Reliability of the implemented system to consistently perform its intended function
- o Efficiency with which the implemented system is to use computer resources
- o Maintainability
- o Technology transparency

6.0 TRACEABILITY TO PARENT'S DESIGN

Describe how these requirements map to the requirements allocated from the parent. Use a table for presentation as an aid to clarity, and show both that requirements allocated from the parent have been taken into account and that requirements specified herein can be traced to the parent, or that there is a valid reason for introduction of any new requirements at this level.

7.0 PARTITIONING FOR PHASED DELIVERY

If the component is to be developed in several stages for phased delivery, identify the content for each delivery in terms of:

1) Requirements and functions to be satisfied in the initial delivery.
2) Additional requirements and functions to be satisfied for each successive delivery.

Note that incremental development or phased delivery decisions at a higher (parent) level may impose phased delivery requirements upon this component.

8.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P200-HW

HARDWARE REQUIREMENTS

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
HARDWARE REQUIREMENTS DID: SMAP-DID-P200-HW

EXPLANATORY NOTE

The purpose of the hardware requirements is to specify the functional, performance, and interface requirements for a hardware component. Requirements approach and tradeoff results are described. This section also specifies the major characteristics, implementation constraints, and design goals for hardware component.

For the sake of traceability to the lowest level of implementation, each requirement shall be uniquely identified. A hierarchical or other classification scheme may be used to designate requirements that are allocated by groups to higher-level components and functions.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 REQUIREMENTS APPROACH AND TRADEOFFS

Describe the overall approach in gathering, analyzing, and synthesizing requirements, including use of prototyping techniques. Explain the tradeoff process used to analyze conflicting requirements and arrive at the actual specifications for those requirements. Requirements trades and analysis information (such as a prototyping effort report), especially that which must be reevaluated or considered when changes are proposed during development or maintenance, should be included in an appendix or explicitly referenced.

4.0 EXTERNAL INTERFACE REQUIREMENTS

The purpose of this section is similar to that of the traditional interface requirements document; that is, it contains the specification of requirements for interfaces between this hardware component and its external environment (including all its users including both humans and other systems). This section should be rolled-out when it is desirable to place it under

configuration control as a separate item. When rolled-out, it becomes the external interface requirements volume.

Refer to the External Interface Requirements DID (SMAP-DID-P210) for a further description of the content for this section.

5.0 REQUIREMENTS SPECIFICATION

5.1 Process Requirements

Describe, as a separately numbered item for the sake of traceability, the process (functional) requirements for the hardware component in such terms as:

- o The purpose of the function
- o The operation performed
- o Inputs and outputs of the function along with their source and destination
- o Control of the function
- o Changes in modes or states

5.2 Performance and Quality Engineering Requirements

Specify, as a separately numbered item for the sake of traceability, each performance requirement for the hardware. Express the requirement in testable, quantitative terms, with appropriate tolerances and accuracy of measurement, and in order of priority.

1) Address such operational requirements as:

   - o Timing and sizing requirements
   - o Capacity and operational frequency ranges
   - o Response time ranges
   - o Physical environment ranges (e.g., temperature, pressure)
   - o Sequence and timing of events
   - o Mean time between failure

2) Specify fault tolerance and recovery requirements for the hardware in terms of:

   - o Determination of when tolerable limits are exceeded
   - o Recovery to normal operations from anomalous conditions

3) Describe environmental characteristics affecting performance, including transportation, storage, and deployment of the system, such as:

   - o Natural environment: heat, pressure, moisture, etc.

- o Electromagnetic and other forms of radiation, including both those in the natural environment and those generated by the system
- o Magnetic environment
- o Hostile environment
- o Anticipated number of installations and their locations

4) Quality Engineering Requirements such as:

- o Reliability
- o Maintainability

5.3 Safety Requirements

Specify, as separately numbered items for the sake of traceability, the safety and security requirements for the hardware. Express each requirement in testable and quantitative terms. Prioritize these requirements.

5.4 Security and Privacy Requirements

Specify, as separately numbered items for the sake of traceability, the security and privacy requirements for hardware. Express each requirement in testable and quantitative terms. Prioritize these requirements.

5.5 Implementation Constraints

Describe general implementation constraints as well as such specific constraints as physical environment and sizing. Include any constraints to utilize government-furnished equipment (GFE) or commercial-off-the-shelf (COTS) hardware.

For example, describe any requirement to use or not to use existing hardware (whether the source is commercial, institutional, internal, or government-furnished). Also describe for each inheritable its source and technical requirements to acquire, integrate, and release the inheritable into the operational hardware environment.

If the requirement is to use existing hardware, then describe the use of the hardware in terms of the functional requirements to be met.

List or reference engineering and technical standards to be

applied in the development of the hardware.

5.6 Site Adaptation

Specify requirements for adapting the component to the physical environments within which it operates, including site-specific adaptation data such as site latitude and longitude, radar ranges and areas of coverage, and prescribed safety limits. Adaptation requirements may be presented in tabular form.

5.7 Design Goals

State design goals for the hardware in terms of:

- Correctness to the degree that the implemented system is to satisfy its requirements
- Reliability of the implemented system to consistently perform its intended function
- Efficiency with which the implemented system is to use computer resources
- Maintainability
- Technology transparency

6.0 TRACEABILITY TO PARENT'S DESIGN

Describe how these requirements map to the requirements allocated from the parent. Use a table for presentation as an aid to clarity, and show both that requirements allocated from the parent have been taken into account and that requirements specified herein can be traced to the parent, or that there is a valid reason for introduction of any new requirements at this level.

7.0 PARTITIONING FOR PHASED DELIVERY

If the component is to be developed in several stages for phased delivery, identify the content for each delivery in terms of:

1) Requirements and functions to be satisfied in the initial delivery.
2) Additional requirements and functions to be satisfied for each successive delivery.

Note that incremental development or phased delivery decisions at a higher (parent) level may impose phased delivery requirements upon this component.

8.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P200-OP

OPERATIONAL PROCEDURES REQUIREMENTS

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
OPERATIONAL PROCEDURES REQUIREMENTS: SMAP-DID-P200-OP

EXPLANATORY NOTE

The purpose of the operational procedures requirements is to specify the functional, performance, and interface requirements for a operational procedures component. Requirements approach and tradeoff results are described. This section also specifies the major characteristics, implementation constraints, and design goals for operational procedures component.

For the sake of traceability to the lowest level of implementation, each requirement shall be uniquely identified. A hierarchical or other classification scheme may be used to designate requirements that are allocated by groups to higher-level components and functions.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 REQUIREMENTS APPROACH AND TRADEOFFS

Describe the overall approach in gathering, analyzing, and synthesizing requirements, including use of prototyping techniques. Explain the tradeoff process used to analyze conflicting requirements and arrive at the actual specifications for those requirements. Requirements trades and analysis information (such as a prototyping effort report), especially that which must be reevaluated or considered when changes are proposed during development or maintenance, should be included in an appendix or explicitly referenced.

4.0 EXTERNAL INTERFACE REQUIREMENTS

The purpose of this section is similar to that of the traditional interface requirements document; that is, it contains the specification of requirements for interfaces between this operational procedures component and its external environment (i.e., all its users including both humans and other systems). This section should be rolled-out when it is desirable to place it under configuration control as a separate item. When rolled-out, it becomes the external interface requirements volume.

Refer to the External Interface Requirements DID (SMAP-DID-P210) for a further description of the content for this section.

5.0 OPERATIONAL PROCEDURES REQUIREMENTS

5.1 Process Requirements

Describe, as a separately numbered item for the sake of traceability, the process requirements for the operational procedures component in such terms as:

- Control functions
- Initiation activities
- Monitoring and diagnostic functions
- Recovery functions
- Timing and sequence of activities
- Emergency activities

5.2 Safety Requirements

Specify, as separately numbered items for the sake of traceability, the safety and security requirements for the operational procedures. Express each requirement in testable and quantitative terms. Prioritize these requirements.

5.3 Security and Privacy Requirements

Specify, as separately numbered items for the sake of traceability, the security and privacy requirements for the operational procedures. Express each requirement in testable and quantitative terms. Prioritize these requirements.

5.4 Implementation Constraints

Specify any constraints on the design or implementation of this operational procedures component, including any engineering and technical standards to be applied in the development of the operational procedures.

5.5 Design Goals

When appropriate, describe design goals (in prioritized order) in terms of:

- Correctness to the degree that the implemented component is to satisfy its requirements
- Reliability of the implemented component to consistently perform its intended function
- Efficiency with which the implemented component is to use operator resources

6.0 TRACEABILITY TO PARENT'S DESIGN

Describe how these requirements map to the requirements allocated from the parent. Use a table for presentation as an aid to clarity, and show both that requirements allocated from the parent have been taken into account and that requirements specified herein can be traced to the parent, or that there is a valid reason for introduction of any new requirements at this level.

7.0 PARTITIONING FOR PHASED DELIVERY

If the component is to be developed in several stages for phased delivery, identify the content for each delivery in terms of:

1) Requirements and functions to be satisfied in the initial delivery.
2) Additional requirements and functions to be satisfied for each successive delivery.

Note that incremental development or phased delivery decisions at a higher (parent) level may impose phased delivery requirements upon this component.

8.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P210

EXTERNAL INTERFACE REQUIREMENTS

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
EXTERNAL INTERFACE REQUIREMENTS DID: SMAP-DID-P210

EXPLANATORY NOTE

The purpose of the external interface requirements is to provide a single place where the interfaces between two different information systems, human users, or components may be stated. It may be desirable to roll-out this section into a volume for ease of configuration management.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 INTERFACES

Identify and describe each interface with each class of user, including human users and other information systems. Each interface may represent a bi-directional flow of information. Use a graphic representation of the interfaces when appropriate for the sake of clarity.

Specify the requirements governing each interface. Number or otherwise uniquely identify each requirement for the sake of traceability. Specify each requirement in testable, quantitative terms. Provide additional information about each requirement to aid in understanding its purpose and effect, and the goals for reliability, flexibility, etc.

The requirement definition should address the following topics, as appropriate:

- Purpose of the interface
- Requirements for the interface, such as process, performance, safety, security, etc.
- Implementation constraints on the interface
- If applicable, traceability to parent's design

4.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

5.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

6.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

7.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P300-SY

INFORMATION SYSTEM DESIGN

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
INFORMATION SYSTEM DESIGN DID: SMAP-DID-P300-SY

EXPLANATORY NOTE

The purpose of the information system design is to record the design information including design rationale and trades, the selected architecture of the information system, and the allocation of requirements to the subsystems or components.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 DESIGN APPROACH AND TRADEOFFS

Describe the rationale and tradeoffs, and other design considerations, including any use of prototyping, influencing the major decisions affecting the design. Detailed design engineering and trades information that must be reevaluated or considered when changes are proposed during development or during sustaining engineering should be included in an appendix or explicitly referenced.

4.0 EXTERNAL INTERFACES DESIGN

The purpose of this section is similar to that of the traditional Interface Control Document (ICD); that is, it contains the design specifications for interfaces between the information system and its external users (human and other systems).

This section should be rolled-out when it is desirable to place it under configuration control as a separate item, such as when two systems are referencing the same interface design. When rolled-out, it becomes the external interface design volume.

The primary interfaces to be designed are:

- o User Interfaces
- o Interface Allocation

Refer to the Information System External Interface Design DID (SMAP-DID-P311-SY) for a further description of the content for this section.

5.0 ARCHITECTURAL DESIGN

The purpose of the architectural design is to give a clear description of the top-level design of the information system. Identify and describe the structure of the information system in terms of its subsystems or its major software, hardware, and operational procedures components. Describe the internal interfaces between these subsystems or components.

The design must address not only process and data requirements but also performance requirements, implementation constraints, site adaptation requirements, and design goals.

6.0 REQUIREMENTS ALLOCATION AND TRACEABILITY

The purpose of this section is to allocate the information system's requirements to the subsystems or major components identified in the preceding section. Use a table or other graphic if this aids the presentation. Ensure that all requirements are allocated, and that a complete set of requirements (including performance, site adaptation, etc.) for each subsystem or component is listed.

7.0 PARTITIONING FOR INCREMENTAL DEVELOPMENT

If the information system is to be developed incrementally (i.e., using the "build a little, test a little" approach with either a single delivery or as an interim process between deliveries), identify the design elements to be included in each increment.

Note that the design partitioning must conform to any phased delivery requirements for this or a higher level information system that are specified in the requirements section of this information system's product specification.

8.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P300-OP

OPERATIONAL PROCEDURES DESIGN

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
OPERATIONAL PROCEDURES DESIGN DID: SMAP-DID-P300-OP

EXPLANATORY NOTE

The purpose of the operational procedures design is to describe the design approach and design for the development of the operational procedures. The actual operational procedures are documented in the Operational Procedures Manual.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 DESIGN APPROACH AND TRADEOFFS

Describe the rationale and tradeoffs, and other design considerations, including any use of prototyping, influencing the major decisions affecting the design of the operational procedures. Detailed design engineering and trades information that must be reevaluated or considered when changes are proposed during development or during sustaining engineering should be included in an appendix or explicitly referenced.

4.0 DESIGN DESCRIPTION

Describe the classes of procedures in terms of:

- o System preparation and set-up procedures
- o Standard operating procedures
- o Fault and recovery procedures
- o Emergency procedures

For each class of procedures define the associated set of scenarios for which procedures are to be developed.

5.0 EXTERNAL INTERFACE DESIGN

Describe how the procedures are to relate to the hardware and software components of the information system.

Describe interactions with users (human and other information systems and components).

6.0 REQUIREMENTS TRACEABILITY

Show the traceability of all requirements including performance, safety, security, and constraints for this operational procedures component to the classes of procedures and scenarios identified in the design presented above. Explicitly identify any derived requirements and trace them to the individual scenarios.

7.0 PARTITIONING FOR INCREMENTAL DEVELOPMENT

If the operational procedures are to be produced using phased delivery or incremental development, specify here what requirements and functions are to be satisfied in each increment of the operational procedures.

8.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P310-SW

SOFTWARE ARCHITECTURAL DESIGN

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
SOFTWARE ARCHITECTURAL DESIGN DID: SMAP-DID-P310-SW

EXPLANATORY NOTE

The purpose of the software architectural design is to record the logical/functional design information for the software component. This includes design rationale and trades, the selected architecture of the component including at least one level of decomposition into software subcomponents or software design elements, the relationships and interface description between the subcomponents or design elements, and the allocation of the software component requirements to the subcomponents or design elements.

If the decomposition is into subcomponents, then another layer of major software components and associated life-cycles and documentation is instantiated.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 DESIGN APPROACH AND TRADEOFFS

Describe the rationale and tradeoffs, and other design considerations, including any use of prototyping, influencing the major decisions affecting the design of the software. Detailed design engineering and trades information that must be reevaluated or considered when changes are proposed during development or during sustaining engineering should be included in an appendix or explicitly referenced.

4.0 ARCHITECTURAL DESIGN DESCRIPTION

The purpose of this section is to describe the logical or functional design of the software component. The following topics should be included:

- o Logical or functional decomposition
- o Description of the subcomponents or design elements

including their inputs and outputs
- o Relationships and interactions between the subcomponents or design elements
- o Logical data design - conceptual schema
- o Entity/data identification and relationships
- o Timing and sequencing
- o Implementation constraints

5.0 EXTERNAL INTERFACE DESIGN

The purpose of this section is similar to that of the traditional Interface Control Document (ICD); that is, it contains the design specifications for interfaces between the software component and its external users (human and other systems or components).

This section should be rolled-out when it is desirable to place it under configuration control as a separate item, such as when two systems are referencing the same interface design. When rolled-out, it becomes the external interface design volume.

The primary topics to be addressed are:

- o Interface design
- o Interface allocation to subcomponents or design elements

Refer to the Software External Interface Design DID (SMAP-DID-P311-SW) for a further description of the content for this section.

6.0 REQUIREMENTS ALLOCATION AND TRACEABILITY

This section documents the allocation of this software component's requirements to the software subcomponents or design elements.

Show the traceability of all requirements including performance and constraints for this software component to the design presented above. Explicitly identify any derived requirements.

7.0 PARTITIONING FOR INCREMENTAL DEVELOPMENT

If the software is to be produced using phased delivery or incremental development, specify here what requirements and functions are to be satisfied in each increment of the software.

8.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P310-HW

HARDWARE ARCHITECTURAL DESIGN

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
HARDWARE ARCHITECTURAL DESIGN DID: SMAP-DID-P310-HW

EXPLANATORY NOTE

The purpose of the hardware architectural design is to record the logical/functional design information for the hardware component. This includes design rationale and trades, the selected architecture of the component including at least one level of decomposition into hardware subcomponents or hardware design elements, the connectivity and interface description between the subcomponents or design elements, and the allocation of the hardware component requirements to the subcomponents or design elements.

If the decomposition is into subcomponents, then another layer of major hardware components and associated life-cycles and documentation is instantiated.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 DESIGN APPROACH AND TRADEOFFS

Describe the rationale and tradeoffs, and other design considerations, including any use of prototyping, influencing the major decisions affecting the design of the hardware. Detailed design engineering and trades information that must be reevaluated or considered when changes are proposed during development or during sustaining engineering should be included in an appendix or explicitly referenced.

4.0 ARCHITECTURAL DESIGN DESCRIPTION

The purpose of this section is to describe the logical or functional design of the hardware component. The following topics should be included:

- Logical/functional decomposition
- Description of the subcomponents or design elements

including their inputs and outputs
- o Relationships and interactions between the sub-components or design elements
- o Timing and sequencing
- o Implementation constraints

5.0 EXTERNAL INTERFACE DESIGN

The purpose of this section is similar to that of the traditional Interface Control Document (ICD); that is, it contains the design specifications for interfaces between the hardware component and its external users (human and other systems or components).

This section should be rolled-out when it is desirable to place it under configuration control as a separate item, such as when two systems are referencing the same interface design. When rolled-out, it becomes the external interface design volume.

The primary topics to be addressed are:

- o Interface Design
- o Interface Allocation to subcomponents or design elements

Refer to the Hardware External Interface Design DID (SMAP-DID-P311-HW) for a further description of the content for this section.

6.0 REQUIREMENTS ALLOCATION AND TRACEABILITY

This section documents the allocation of this hardware component's requirements to the hardware subcomponents or design elements.

Show the traceability of all requirements including performance and constraints for this hardware component to the design presented above. Explicitly identify any derived requirements.

7.0 PARTITIONING FOR INCREMENTAL DEVELOPMENT

If the hardware is to be produced using phased delivery or incremental development, specify here what requirements and functions are to be satisfied in each increment of the hardware.

8.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P311-SY

INFORMATION SYSTEM EXTERNAL INTERFACE DESIGN

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
INFORMATION SYSTEM EXTERNAL INTERFACE DESIGN: SMAP-DID-P311-SY

EXPLANATORY NOTE

The purpose of the information system external interface design is to record the interface specifications between the information system and a user (human or another information system or component).

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 USER INTERFACES DESIGN

Describe the design for each interface identified in the requirements section of the Product Specification as an external user interface in terms of:

1) Traceability to the external interface requirements.

2) Information to be passed over the interface in such terms as:

   - o Information description
   - o Initiation criteria
   - o Expected response
   - o Item usage (control, data, message)
   - o Data attributes and format
   - o Conventions
   - o Protocol
   - o Error handling and recovery
   - o Queuing
   - o Electrical and mechanical characteristics
   - o Timing and Sequencing

4.0 INTERFACE ALLOCATION

The purpose of this section is to allocate the information system's external interface requirements to the appropriate subsystems or components. Use a table or other graphic aid if this aids the presentation. Ensure that all external interface requirements, including performance, site adaptation, and design goals, are allocated.

5.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

6.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

7.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P311-SW

SOFTWARE EXTERNAL INTERFACE DESIGN

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
SOFTWARE EXTERNAL INTERFACE DESIGN DID: SMAP-DID-P311-SW

EXPLANATORY NOTE

The purpose of the software external interface design is to record the logical and functional interface specifications between the software component and a user (human or another information system or component).

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 INTERFACE DESIGN

Describe the design for each interface identified in the requirements section of the Software Product Specification as an external interface in terms of:

- Information description
- Initiation criteria
- Expected response
- Protocol and conventions
- Error identification, handling, and recovery
- Queuing
- Implementation constraints

4.0 INTERFACE ALLOCATION

The purpose of this section is to allocate the software's external interface requirements to the appropriate subcomponents or design elements. Use a table or other graphic aid if this aids the presentation. Ensure that all external interface requirements, including performance, site adaptation, and design goals, are allocated.

5.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

6.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

7.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P311-HW

HARDWARE EXTERNAL INTERFACE DESIGN

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
HARDWARE EXTERNAL INTERFACE DESIGN DID: SMAP-DID-P311-HW

EXPLANATORY NOTE

The purpose of the hardware external interface design is to record the logical/functional interface specifications between the hardware component and a user (human or another information system or component).

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 INTERFACE DESIGN

Describe the design for each interface identified in the requirements section of the Hardware Product Specification as an external interface in terms of:

- Information description
- Initiation criteria
- Expected response
- Item usage (control, data, message)
- Data attributes and format
- Conventions
- Protocol
- Error handling and recovery
- Queuing
- Timing and sequencing
- Implementation constraints

4.0 INTERFACE ALLOCATION

The purpose of this section is to allocate the hardware's external interface requirements to the appropriate subcomponents or design elements. Use a table or other graphic aid if this aids the presentation. Ensure that all external interface requirements, including performance, site adaptation, and design goals, are allocated.

5.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

6.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

7.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P320-SW

SOFTWARE DETAILED DESIGN

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4.2 Detailed Design of Compilation Units

5.0 EXTERNAL INTERFACE DETAILED DESIGN

6.0 CODING AND IMPLEMENTATION NOTES

7.0 FIRMWARE SUPPORT MANUAL

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10.0 NOTES

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
SOFTWARE DETAILED DESIGN DID: SMAP-DID-P320-SW

EXPLANATORY NOTE

The purpose of the software detailed design is to record the design information for the software component. This includes design rationale and trade-offs, the selected design of the component including its decomposition into compilation and code units, the design of all interfaces, and the mapping between the logical or functional design (i.e., design elements) of the software component and its detailed design units.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 DETAILED DESIGN APPROACH AND TRADEOFFS

Describe the rationale and tradeoffs, and other design considerations, including any use of prototyping, influencing the major decisions affecting the design of the software. Detailed design engineering and trades information that must be reevaluated or considered when changes are proposed during development or during sustaining engineering should be included in an appendix or explicitly referenced.

4.0 DETAILED DESIGN DESCRIPTION

4.1 Compilation Unit Design and Traceability to Architectural Design

This section presents the overall physical design of the software component into its compilation units. The information typically includes:

- Compilation unit identification
- Compilation unit descriptions including:
  - inputs and outputs

  - functions (based on design elements)
  - data descriptions and relationships
  - diagrams
  - control and signal flow
  - error handling

- Interfaces descriptions between compilation units

- Packaging details such as placement of units in library

This section includes a mapping of (or the traceability between) the architectural design elements to the compilation units.

4.2 Detailed Design of Compilation Units

This section contains the design information detailed to the level necessary to code the individual compilation units and all lower level code units. The information for each unit should include:

- Detailed design to the lowest level (i.e., module or sub-routine)

- Functions or operations

- Algorithms

- Specific data definitions including data conversions

- Local and global data

- Parameters for initiation and adaptation

- Logic flow, including:
  - control flow
  - timing variations
  - priority assignments
  - interrupt priorities and handling

- Error detection and handling

- Physical data design:
  - internal schema
  - query language
  - access method
  - key, record, and data element definition and structure
  - use of database management capability

- Device interface

5.0 EXTERNAL INTERFACE DETAILED DESIGN

The purpose of this section is similar to that of the traditional Interface Control Document (ICD); that is, it contains the detailed design specifications for interfaces between the software component and its external users (human, other systems, and components).

This section should be rolled-out when it is desirable to place it under configuration control as a separate item, such as when two components are referencing the same interface design. When rolled-out, it becomes the External Interface Detailed Design volume.

Refer to the Software External Interface Detailed Design DID (SMAP-DID-P321-SW) for a further description of the content for this section.

6.0 CODING AND IMPLEMENTATION NOTES

The purpose of this section is to specify information such as:

- o Stubs for incremental development
- o Use of compiler options

7.0 FIRMWARE SUPPORT MANUAL

If the software design is implemented in firmware, refer to the Firmware Support Manual DID (SMAP-DID-P322-SW) for a further description of the content of this section.

8.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P320-HW

HARDWARE DETAILED DESIGN

DATA ITEM DESCRIPTION

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
HARDWARE DETAILED DESIGN DID: SMAP-DID-P320-HW

EXPLANATORY NOTE

The purpose of the hardware detailed design is to record the physical design information for the hardware component. This includes physical design rationale and trades, the selected physical design of the component including its decomposition into assemblies and line replaceable units, the design of all physical interfaces, and the mapping between the logical/ functional design (i.e. design elements) of the hardware component and its physical design.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 DETAILED DESIGN APPROACH AND TRADEOFFS

Describe the rationale and tradeoffs, and other design considerations, including any use of prototyping, influencing the major decisions affecting the design of the hardware. Detailed design engineering and trades information that must be reevaluated or considered when changes are proposed during development or during sustaining engineering should be included in an appendix or explicitly referenced.

4.0 DETAILED DESIGN DESCRIPTION

4.1 Assembly Design and Traceability to Architectural Design

This section presents the overall physical design of the hardware component into its assemblies. The information typically includes:

- Assembly identification
- Assembly descriptions including:
  - inputs and outputs

  - functions (based on design elements)
  - diagrams
  - control and signal flow
  - error handling

- Interfaces descriptions between assemblies including
  - interrupts and signals
  - mechanical and electronic connections

- Overall packaging description

This section includes a mapping (or the traceability) between architectural design elements into the assemblies.

4.2 Detailed Design of Assemblies

This section contains the design information detailed to the level necessary to fabricate the individual assemblies and their physical units (such as line replaceable units). The information for each assembly should include:

- Detailed design to the single fabrication unit level (such as a chip)
- Functions or operations for each unit
- Ports and connectors
- Schematic diagrams
- Logic flow including
  - timing variations
  - priority assignments
- Error detection and handling
- Wiring diagrams
- Packaging design and construction
- Environmental fabrication constraints

5.0 EXTERNAL INTERFACE DETAILED DESIGN

The purpose of this section is similar to that of the traditional Interface Control Document (ICD); that is, it contains the detailed design for interfaces between the hardware component and its external users (human and other systems and components).

This section should be rolled-out when it is desirable to place it under configuration control as a separate item, such as when two systems are referencing the same interface design. When rolled-out, it becomes the external interface detailed design volume.

Refer to the Hardware External Interface Detailed Design DID (SMAP-DID-P321-HW) for a further description of the content for this section.

6.0 FABRICATION NOTES

The purpose of this section is to record information about the fabrication of the hardware component. This section could contain information such as:

- o Special fabrication instruments or constraints
- o Parts list

7.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P321-SW

SOFTWARE EXTERNAL INTERFACE DETAILED DESIGN

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
SOFTWARE EXTERNAL INTERFACE DETAILED DESIGN: SMAP-DID-P321-SW

EXPLANATORY NOTE

The purpose of the software external interface detailed design is to record the physical design information for the external interfaces to the software component. This includes the data types, physical data format or layout, message descriptions, data transmissions, and protocols and priorities.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 INTERFACE ALLOCATION DESIGN

This section describes the mapping (or the traceability) of the external interface design of the software component into its specific compilation units and lower level units.

4.0 PHYSICAL INTERFACE DESIGN

Describe each external interface for the software component. or each interface, describe the details of the interface, including:

a) (Interface Name/Identifier) Type and Purpose. Describe the type and purpose of the interface.

b) Data Transmission. Provide a detailed specification of the data records and elements transmitted across the interface in such terms as:

- o Unique identifier for each record and data element
- o Brief description and purpose of each record and data element
- o Source and destination components for each record or single data element transmission
- o Data type and (if appropriate) unit of measure
- o Limit and range of values
- o Accuracy

- o Precision (in terms of significant digits)

If shared memory is used, then define:

- o The purpose for the shared memory
- o The shared memory location(s)s used for transmissions across the interface

c) Message Descriptions. Identify each message transmitted across the interface and specify the assignment of data elements to each message. Provide cross references between data elements and messages, as a two-way sorted list.

d) Interface Priority. Specify the relative priority of this interface and of each message transmitted across it.

e) Communication Protocols. Identify the protocol for the interface by name and describe its technical details in terms of the following:

- o Fragmentation and reassembly of messages
- o Message formatting
- o Error control and recovery procedures, including fault tolerance features
- o Synchronization, including connection establishment, maintenance, termination, and timing
- o Flow control, including sequencing, and buffer allocation
- o Data transfer rate, whether periodic or aperiodic, and minimum interval between transfers
- o Routing, addressing, and naming conventions
- o Transmission services, including priority and grade
- o Status, identification, notification, and other reporting features
- o Security, including encryption, user authentication, compartmentalization, and auditing

5.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

6.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

7.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P321-HW

HARDWARE EXTERNAL INTERFACE DETAILED DESIGN

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7.0 NOTES

8.0 APPENDICES

PRODUCT SPECIFICATION DOCUMENTATION STANDARD
HARDWARE EXTERNAL INTERFACE DETAILED DESIGN: SMAP-DID-P321-HW

EXPLANATORY NOTE

The purpose of the hardware external interface detailed design is to record the physical design information for the external interfaces to the hardware component. This includes the physical wiring, ports and connectors, and timing and protocol definitions.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 INTERFACE ALLOCATION DESIGN

This section describes the mapping (or traceability) of the external interface design of the hardware component into its specific assemblies and units.

4.0 PHYSICAL INTERFACE DESIGN

This section contains the physical design information detailed to the level necessary to ensure the proper function of the physical interfaces of the physical units of the hardware component (such as line replaceable units). The information should include:

- Ports and connectors
- Schematic diagrams
- External signals and interrupts including
  - protocols
  - timing variations
  - priority assignments
- Error detection and handling
- Wiring diagrams
- Environmental fabrication constraints

5.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

6.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

7.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P322-SW

(SOFTWARE) FIRMWARE SUPPORT MANUAL

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
(SOFTWARE) FIRMWARE SUPPORT MANUAL DID: SMAP-DID-P322-SW

EXPLANATORY NOTE

The purpose of the firmware support manual is to provide an instruction and reference manual for the firmware programmer to program, support, maintain, and monitor firmware that is a part of the software component.

The firmware support manual provides the information necessary to program the read-only memory (ROM) devices, programmable ROMs (PROMs), and erasable PROMs (EPROMs). The firmware support manual describes the ROM devices and support software and equipment required for reprogramming.

The firmware support manual does not provide information regarding the design and implementation (bit pattern) within the device. That information is contained in the software detailed design section.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 DEVICES

List the firmware devices and provide the following information for each.

3.1 Physical Description

Provide a complete physical description of ROM components, including as a minimum:

1) Memory size (length and width in bits).

2) Pin functional descriptions.

3) Operating characteristics such as access time, power supply/requirements, logic levels.

4) Logical interfaces (e.g., addressing scheme, chip selection, etc.).

5) Available (unused) portion.

6) Internal and external identification scheme.

7) Manufacturer's part number.

8) Timing characteristics (include diagram if appropriate).

3.2 Installation and Replacement

Describe all installation, removal, and replacement procedures for the ROM device. Describe the device addressing scheme and its implementation. If appropriate, use a diagram to describe the board layout and which includes a socket number and pin identification for the device.

3.3 Limitations

Describe the operational and environmental limits to which the ROM device may be subjected and still maintain satisfactory operation.

4.0 PROGRAMMING TOOLS

The purpose of this section is to describe the hardware and software tools and procedures for programming the device.

4.1 Equipment

Describe the equipment used for programming the ROM device, including general purpose peripherals and special equipment used for device loading, test, and verification.

Identify each piece of equipment by:

- o Manufacturer's name and designation.
- o Major functional purpose of the equipment.
- o Any unique features.

4.2 Software

Describe the computer software used for programming the ROM device, including utilities, for device loading, burn-in, and test.

Identify each software item by:

- Vendor and vendor's designation, including version number
- Major function in terms of purpose
- Any unique features

4.3 Programming Procedures

Describe the procedures used for ROM programming, including:

- Logic data generation
- Device loading
- Reliability aging conditions and schedules
- Test
- Verification

5.0 SECURITY IMPLICATIONS

Describe any special handling or security requirements for the devices or support hardware and software.

6.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

7.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P400

VERSION DESCRIPTION

DATA ITEM DESCRIPTION

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
VERSION DESCRIPTION DID: SMAP-DID-P400

EXPLANATORY NOTE

The purpose of the version description is to provide a precise description of the particular version of the information system or component being released. This description includes:

- o Version of requirements applicable to this version
- o Version of design applicable to this version
- o Exact description of the product contents in this version

For paper products, the product itself may also be included within the version description section, if appropriate.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 PRODUCT DESCRIPTION

By reference to the appropriate sections of the requirements or design sections of the product specification, give a description of this version of the product.

4.0 INVENTORY AND PRODUCT

4.1 Materials Released

This section lists physical materials delivered with the version:

1) All media containing code (tapes, disks) that constitute the version and specific formats.

2) All operation and support documents.

3) All utility and support software and equipment that is not a part of the version but that is required to load, operate, or maintain this version.

4) All required hardware.

4.2 Product Content

Identify the exact configuration of the product delivered by this version. Paper products may be included here in-line or rolled-out into a separate volume. For non-paper products or rolled-out volumes, include a pointer to the product (e.g., model and serial numbers, or a document citation).

For software, indicate the location of the source and object code for this version. Printed listings may be included as an appendix to this document. Executables will normally be included on the tapes (or other medium) listed in the preceding section. Specify here the compiler and, if applicable, the assembler, and version of each, used to generate the executable from the source code.

For hardware, indicate the location of the detailed design drawings, part listings, hardware model and serial numbers, and other information that precisely identifies the hardware. The data for hardware identification can be recorded in a manner similar to that used for software.

For operational procedures, the exact configuration is the operational procedures manual (refer to SMAP-DIDP410-OP). Hence, the version number of that manual is an essential part of the version description. In most cases these procedures are rolled-out into a separate volume for ease of use.

When appropriate, the product description statement will include version descriptions for subsystems, components, etc., to the lowest configuration management unit. For example, for a major software component, it is a statement of the version descriptions of all of the software compilation units. For an information system, it is a statement of the version descriptions for all of the next level decomposition items that may be subsystems, or the hardware, software, and operational procedures components.

5.0 CHANGE STATUS

Describe the capabilities newly installed in this version. Identify the associated approved change, if applicable. Identify any requirements that are known to be unsupported.

Also identify any changes in capabilities provided by the previous version, if applicable.

Indicate any interfaces to other components affected by the

changes installed in this version, and describe the impacts. The following sections identify changes applicable to this version (but not to previous versions) and their status.

5.1 Installed Changes

List, by identifier and title, the changes approved by a configuration control authority or board that have been newly incorporated in this version. Identify any change reports (Engineering Change Proposal, Change Requests, Document Change Notice, etc.) associated with each change.

5.2 Waivers

List all waivers that have been approved for this version and summarize their effects on the version's functional capabilities or operation.

5.3 Possible Problems and Known Errors

Identify and describe the operational effects of each possible problem and known error in the version, together with steps being taken to resolve them and ways for working around them.

6.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

7.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P410-OP

OPERATIONAL PROCEDURES MANUAL

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6.0 EMERGENCY PROCEDURES

7.0 DIAGNOSTIC PROCEDURES

8.0 ABBREVIATIONS AND ACRONYMS

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10.0 NOTES

11.0 APPENDICES

PRODUCT SPECIFICATION DOCUMENTATION STANDARD
OPERATIONAL PROCEDURES MANUAL DID: SMAP-DID-P410-OP

EXPLANATORY NOTE

The purpose of the operational procedures manual is to document the actual operational procedures of an information system. This is the product of the operational procedures component of an information system.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 SYSTEM PREPARATION AND SET-UP PROCEDURES

This section describes the procedures conducted by the operator to set-up and prepare the system for operation, both initially and for new releases or modifications to the system.

If instructions provided by the hardware and software components are to be executed, then reference (rather than duplicate) those instructions. Procedures for operators which augment those instructions should be documented here.

4.0 STANDARD OPERATING PROCEDURES

This section describes the detailed operational procedures that are part of the standard practices for operating the information system. The types of procedures defined here include:

- Monitoring procedures
- Daily operating procedures, such as system back-ups and logs for maintenance
- Standard safety and security procedures
- On-demand procedures, such as in response to a user request

If the operator is using a hardware or software feature (documented in the appropriate user's guide), then whenever possible reference, rather than duplicate, those instructions. Procedures for operators which augment those instructions should be documented here.

5.0 FAULT AND RECOVERY PROCEDURES

This section describes the detailed operational procedures to be conducted in case of a fault or abnormal condition in the hardware, software, or some other aspect of the system. The immediate actions and subsequent recovery procedures are documented for every anticipated fault condition.

6.0 EMERGENCY PROCEDURES

This section describes the detailed operational procedures to be conducted in case of an emergency. The types of procedures defined here include:

- Procedures for critical system failures
- Environmental emergency procedures, such as fires or hurricanes
- Safety or security emergency procedures

7.0 DIAGNOSTIC PROCEDURES

Explain diagnostic procedures the operator may employ such as:

- Correlation to error messages
- Diagnostic initialization
- Recording diagnostic data
- Analysis of diagnostic results

8.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P500

USER'S GUIDE

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7.0 ERROR AND WARNING MESSAGES

8.0 RECOVERY STEPS

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10.0 GLOSSARY

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12.0 APPENDICES

PRODUCT SPECIFICATION DOCUMENTATION STANDARD
USER'S GUIDE DID: SMAP-DID-P500

EXPLANATORY NOTE

The purpose of the user's guide is to provide end users (rather than system operators or administrators) with instructions explaining how to execute the system or component (software, hardware) effectively.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 OVERVIEW OF PURPOSE AND FUNCTIONS

Describe the purpose and main capabilities of the system or component, and state its overall operation in terms of:

- Functions
- Options
- Restrictions and limitations

If appropriate, reference the version description section.

4.0 INSTALLATION AND INITIALIZATION

Explain in detail the procedures for installing, tailoring, and initiating the system or component, including:

- Equipment set-up
- Power-on and power-off
- Bootstrap and load
- Initiation commands
- Interrupt/recovery/restart
- Initialization of files, variables, or other data
- Tailoring, reconfiguration, adaptation
- Re-initialization after failure

5.0 STARTUP AND TERMINATION

Describe how to start and terminate operation normally, and how to determine whether normal termination has occurred.

If the user has some control over abnormal termination, describe the procedures involved such as:

- Trouble indicators and corrective actions
- On-line interventions
- Trap recovery
- Operating communications
- Fault isolation techniques
- Conditions requiring software abort or equipment shut-down

Describe procedures for restarting after both normal and abnormal termination. If recovery procedures are required for restarting after abnormal termination, explain them in terms of:

- Check points
- Collection of failure data
- Restoring files
- Restoring devices to operational mode

6.0 FUNCTIONS AND THEIR OPERATION

Describe each function in terms of:

- Purpose of function
- Step-by-step procedures for execution
- User inputs: commands, data, and option selection
- Expected results and the procedures for examining these results
- Related functions

Desc any inputs from a source other than the user that may occur e the system or component is in use and that may affect its in face with the user; for example, inputs from a remote sensor. Include applicable attributes of the input such as format, frequency, effect upon the system or component state or mode.

7.0 ERROR AND WARNING MESSAGES

List and explain each possible error condition and associated message that may be encountered. Describe the corresponding corrective actions to be taken.

If appropriate, identify an agency that may be called upon for assistance.

8.0 RECOVERY STEPS

Explain recovery procedures the user may employ.

9.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

11.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

12.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P600-SY

INFORMATION SYSTEM MAINTENANCE MANUAL

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8.0 APPENDICES

PRODUCT SPECIFICATION DOCUMENTATION STANDARD
INFORMATION SYSTEM MAINTENANCE MANUAL DID: SMAP-DID-P600-SY

EXPLANATORY NOTE

The purpose of the information system maintenance manual is to provide a repository of data and information to aid in analyzing and debugging the information system. The information system maintenance manual contains maintenance information on each component or subsystem of the information system (either directly or by reference) and any additional system considerations.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 PROBLEM DETECTION AND FAULT ISOLATION

Address first the overall information system, then subsystems and components (directly or by reference).

Discuss the problem detection, fault isolation, and reporting for the information system. Continue this discussion to the subsystem and component level (directly or by reference). Describe the course of action taken for each type of problem. This description should include a statement of the methods employed in problem detection. Discuss problem detection and resolution in terms of the environment in which the information system is placed. Describe any safety, security, or privacy constraints that must be imposed on maintenance procedures.

This section includes a description of the built-in test diagnostics including:

- Function and operation
- Normal results
- Abnormal conditions and probable fault diagnostics

4.0 PREVENTATIVE MAINTENANCE

The purpose of this section is to describe the preventative maintenance procedures that are to be used on this information system. Continue this discussion to the subsystem or component level. Topics typically include:

- Maintenance procedures
- Test descriptions including the use of built-in tests
- Frequency of maintenance

5.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

6.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

7.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P600-SW

SOFTWARE MAINTENANCE MANUAL

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
SOFTWARE MAINTENANCE MANUAL DID: SMAP-DID-P600-SW

EXPLANATORY NOTE

The purpose of the software maintenance manual is to provide a repository of data and information to aid in analyzing and debugging a software component and its lower level software units. This should not duplicate information available in other sections of the software product specification.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 IMPLEMENTATION DETAILS

Describe details about:

- Specific data representations or formats
- Operating system interfaces and dependencies
- Support software such as libraries
- Hardware dependencies
- Other interfaces

4.0 MODIFICATION AIDS

Describe design details that could be used in the modification or expansion of the software component.

5.0 CODE ADAPTATION

Describe design details that support the initialization or adaptation of data or code. Relate this information to version information of the software component.

6.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

7.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P600-HW

HARDWARE MAINTENANCE MANUAL

DATA ITEM DESCRIPTION

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3.0 PROBLEM DETECTION AND FAULT ISOLATION

4.0 PREVENTATIVE MAINTENANCE

5.0 ABBREVIATIONS AND ACRONYMS

6.0 GLOSSARY

7.0 NOTES

8.0 APPENDICES

PRODUCT SPECIFICATION DOCUMENTATION STANDARD
HARDWARE MAINTENANCE MANUAL DID: SMAP-DID-P600-HW

EXPLANATORY NOTE

The purpose of the hardware maintenance manual is to provide a repository of data and information that is to aid in analyzing and debugging hardware components to at least the line replaceable unit level. When information relevant to hardware maintenance has been previously placed in another part of the hardware product specification, a reference to that information should be given.

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 PROBLEM DETECTION AND FAULT ISOLATION

Discuss the problem detection, fault isolation, and reporting to at least the line replaceable unit level for each assembly of the hardware component. Describe the course of action taken for each type of problem. This description should include a statement of the methods employed in problem detection. Discuss problem detection and resolution in terms of the environment in which the hardware component is placed. Describe any safety, security, or privacy constraints that must be imposed on maintenance procedures.

This section includes a description of the built-in test diagnostics including:

- Function and operation
- Normal results
- Abnormal conditions and probable fault diagnostics

4.0 PREVENTATIVE MAINTENANCE

The purpose of this section is to describe the preventative maintenance procedures that are to be used on this hardware component. Topics typically include:

- Maintenance procedures
- Test descriptions including the use of built-in tests
- Frequency of maintenance

5.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

6.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

7.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P920

STANDARDS AND GUIDELINES

DATA ITEM DESCRIPTION

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4.0 <THE STANDARD>

5.0 APPLICATION AND SUPPORT OF <THE STANDARD>

5.1 Guidelines for Use of <the Standard>
5.2 Tools Supporting the Application and Use of <the Standard>

6.0 ASSURANCE AND ENFORCEMENT OF <THE STANDARD>

7.0 ABBREVIATIONS AND ACRONYMS

8.0 GLOSSARY

9.0 NOTES

10.0 APPENDICES

PRODUCT SPECIFICATION DOCUMENTATION STANDARD
STANDARDS AND GUIDELINES DID: SMAP-DID-P920

EXPLANATORY NOTE

The purpose of the standards and guidelines is to document new standards that have been developed per direction in the management plan. In general, these standards refer to a convention that has been developed for use across a number of systems or components. This DID is not intended to be used to document the design of an interface between two systems or components.

The selection and use of standards is described in the appropriate management plan(s).

1.0 INTRODUCTION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

2.0 RELATED DOCUMENTATION

The outline and content description to be used when preparing this section is described in detail in the Product Specification Template DID (SMAP-DID-P999).

3.0 OVERVIEW OF STANDARD

3.1 Scope of Standard

Describe the scope and boundaries for which the standard is applicable. The scope is usually expressed in organizational terms.

3.2 Rationale for Standard

Explain the reasons and objectives for the standard. Include any background information necessary for understanding the rationale.

3.3 Interface with Other Standards

Explain the relationship between this standard and other standards with which there is an interface or potential for overlap.

4.0 <THE STANDARD>

Specify the standard in simple, clear, and operational terms. Follow the statement of the standard with an explanation of the rules to be followed in its application.

5.0 APPLICATION AND SUPPORT OF <THE STANDARD>

5.1 Guidelines for Use of <the Standard>

Explain how the standard is to be applied in various situations.

5.2 Tools Supporting the Application and Use of <the Standard>

Describe any tools, such as an engineering support environment, that support application and use of the standard.

6.0 ASSURANCE AND ENFORCEMENT OF <THE STANDARD>

Describe by whom the standard will be assured and enforced, using what methods, and at which points in the life-cycle.

7.0 ABBREVIATIONS AND ACRONYMS

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

8.0 GLOSSARY

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

9.0 NOTES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

10.0 APPENDICES

Refer to the Product Specification Template DID (SMAP-DID-P999) for the detailed description of content for this section.

SMAP-DID-P999

PRODUCT SPECIFICATION TEMPLATE

DATA ITEM DESCRIPTION

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1.4 Volume Status and Schedule
1.5 Volume Organization and Roll-Out

2.0 RELATED DOCUMENTATION

2.1 Parent Documents
2.2 Applicable Documents
2.3 Information Documents

3.0 - N.0 [Major subsections of the Product Specification being rolled-out into a separate volume]

N+1.0 ABBREVIATIONS AND ACRONYMS

N+2.0 GLOSSARY

N+3.0 NOTES

N+4.0 APPENDICES

PRODUCT SPECIFICATION DOCUMENTATION STANDARD
PRODUCT SPECIFICATION TEMPLATE DID: SMAP-DID-P999

EXPLANATORY NOTE

The purpose of the template is to describe the set of common sections that are to appear in the document specified by this documentation standard and in any rolled-out volumes. When using this template for the document itself, rather than for a rolled-out volume, substitute "Document" for "Volume" in the following.

1.0 INTRODUCTION

1.1 Identification of Volume

Identify this physical volume in terms of its relationship to the parent document(s) in the documentation set for this information system or component. For documentation set documents, identify the parent(s) in the decomposition tree for the information system. For example:

"This is the Software Product Specification for the XYZ Information System."

"This is the Concept Volume of the Product Specification for the XYZ Information System."

"This is the External Interfaces Volume of the Detailed Design volume of the Hardware Product Specification for the XYZ Information System."

1.2 Scope of Volume

Describe the area of cognizance, responsibility, and applicability for this volume.

1.3 Purpose and Objectives of Volume

Describe the purpose and objectives for this volume concisely and in specific terms.

1.4 Volume Status and Schedule

Describe the status, including goals and dates, for production or revision of the volume. Documentation is often generated incrementally or iteratively. If this is the case for this volume, also summarize here the planned updates and their release dates.

1.5 Volume Organization and Roll-Out

Briefly describe what is presented in each major section within this version of the volume and what is in each appendix.

If any sections are rolled-out into subordinate volumes of this volume, then cite those volumes and provide a documentation tree pointing to the subordinate volumes and relating them to the parent.

2.0 RELATED DOCUMENTATION

The purpose of this section is to provide the references or bibliography for this volume.

Cite documents by short or common title (if any), full title, version or release designator (if appropriate), date, publisher or source, and document number or other unique identifier.

2.1 Parent Documents

Begin this section as follows, depending upon whether this is a volume of a document or the document itself:

> "The following document(s) is (are) parent to this volume:"
>
> or:
>
> "The following document(s) is (are) the parent from which this document's scope and content derive:"

If this is a document, cite the appropriate document at the next higher level. For example, an Information System Management Plan would cite the management plan for the next higher level information system, or the Software Product Specification would cite the Software Management Plan and the parent's product specification. If there is no higher level, state "None." here.

If this is a volume rolled-out from a document, cite that document. If this is a volume rolled-out from another volume, cite each volume in the hierarchical path back to the parent

document, starting with the volume immediately superior to this one.

2.2 Applicable Documents

Begin this section as follows:

> "The following documents are referenced herein and are directly applicable to this volume:"

Provide the citations for every document (other than the parent) referenced within this volume, or which are directly applicable, or contain policies or other directive matters that are binding upon the content of this volume.

2.3 Information Documents

Begin this section as follows:

> "The following documents, although not directly applicable, amplify or clarify the information presented in this volume, and are not binding:"

or, use an appropriate introduction to indicate the relationship of the documents listed here to this volume.

3.0 - N.0 CONTENT FOR ROLLED-OUT SECTION

Each major subsection of the section of an information system or component product specification, or of a volume thereof, being rolled-out into a separate subordinate volume becomes a major section in the rolled-out volume.

N+1.0 ABBREVIATIONS AND ACRONYMS

This section follows the sections containing the content for the rolled-out section.

The abbreviations and acronyms section contains an alphabetized list of the definitions for abbreviations and acronyms used in this volume.

N+2.0 GLOSSARY

The glossary contains an alphabetized list of definitions for special terms used in the volume; i.e., terms used in a sense that differs from or is more specific than the common usage for

such terms.

N+3.0 NOTES

Use this section to present information that aids in understanding the information provided in previous sections, and which is not contractually binding.

N+4.0 APPENDICES

The appendices contain material that is too bulky, detailed, or sensitive to be placed in the main body of text. Refer to each appendix in the main body of the text where the information applies. Appendices may be bound separately, but are considered to be part of the volume and shall be placed under configuration control as such.

8.0 ABBREVIATIONS AND ACRONYMS

AR - Acceptance Review

CDR - Critical Design Review

COTS - Commercial off-the-shelf

DID - Data Item Description

DoD - Department of Defense

DRL - Data Requirements List

ECP - Engineering Change Proposal

EPROM - Erasable Programmable Read-Only Memory

FCA - Functional Configuration Audit

FMEA - Failure Modes and Effects Analysis

GFE - Government-furnished equipment

IV&V - Independent Verification and Validation

LRU - Line (or Lowest) Replaceable Unit

MTBF - Mean Time Between Failures

MTTR - Mean Time to Repair

NASA - National Aeronautics and Space Administration

NHB - NASA Handbook

NRCA - Nonconformance Reporting and Corrective Action

PCA - Physical Configuration Audit

PDR - Preliminary Design Review

PROM - Programmable Read-Only Memory

RFP - Request for Proposal

RID - Review Item Discrepancy

ROM - Read-Only Memory

RR - Requirements Review

SMAP - Software Management and Assurance Program

SOW - Statement of Work

SRM&QA - Safety, Reliability, Maintainability, and Quality Assurance

SSE - Software Support Environment of the Space Station Freedom Program

SSFP - Space Station Freedom Program

STD - Standard

TBD - To be determined (at a later date)

TMIS - Technical and Management Information System of the Space Station Freedom Program

TRR - Test Readiness Review

V&V - Verification & Validation.

WBS - Work Breakdown Structure

9.0 GLOSSARY

For terms not appearing in this glossary, refer to the IEEE Standard Glossary (as referenced in Section 2.2).

Acceptance Review - The phase transition review for the Acceptance and Delivery life-cycle phase.

Acquirer - An organization that acquires a capability, such as an information system.

Adaptation - The tailoring of the life-cycle and documentation standards (within the specifications of the rules and guidelines) for a specific program/project, information system, or component.

Allocation - The process of apportioning requirements at one level in the decomposition tree to the subsystems or subcomponents at the next lower level in the decomposition.

Assembly - A physical element of a hardware component consisting of one or more line replaceable units. A hardware component is composed of one or more physical assemblies.

Assurance - Includes any and all activities, independent of organization conducting the activity, that demonstrate the conformance of a product to a prespecified criteria (such as to a design or to a standard).

Assurance Specification - One of the four documents in the documentation set for an information system or component; it encompasses all the technical (i.e., non-planning) aspects of the assurance activities for an information system or component.

Baselining - The official acceptance of a product or its placement under configuration management as defined in the management plan.

Code Q - (NASA) Office of Safety, Reliability, Maintainability, and Quality Assurance

Component - 1) One of the three parts making up an information system: software, hardware, or operational procedures. 2) A portion of a higher-level component of the same type; e.g., a component of the software component (of an information system).

Critical Design Review - The phase transition review for the Detailed Design life-cycle phase.

Data Item Description - The table of contents and associated content description of a document or volume.

Design Element - An identifiable part of a component's architectural design.

Developer - The provider organization responsible for development of an information system or of a hardware, software, or operational procedures component.

Document - One of the four basic types of information for each information system or component: 1) Management Plan, 2) Product Specification, 3) Assurance Specification, and 4) Management Control and Status Reports Document. A document consists of one or more volumes.

Documentation Set - The four basic documents for each information system or component thereof.

Evolutionary Acquisition - The acquisition of an information system over a relatively long period of time in which two or more complete iterations of the life-cycle will be employed to revise and extend the system to such an extent as to require a major requirements analysis and therefore subsequent life-cycle iterations.

Increment - A pre-defined set of units integrated for integration testing by the development organization in response to incremental development plans.

Incremental Development - The process of developing a product before delivery in a series of segments. These segments remain internal to the development organization. The process is used to avoid the big bang approach to software development and help minimize risk. The segments are defined based on the design and documented in the design section of the product specification. The process leads to a single delivery unless used in conjunction with "phased delivery."

Independent Verification and Validation - Verification and validation performed by an independent organization. In general, this is intended to be independent of the development organization. For complete independence, the IV&V organization must report directly to or be funded directly by the acquirer.

Information System - 1) Any system composed of hardware, software, and operational procedures components required to process, store, and/or transmit data. 2) An integrated combination of software, hardware, and operational procedures components that provides a useful capability. An information system is generally software-intensive.

Inheritables - Existing software or hardware to be drawn upon in developing a new information system. The inheritables may be modified to meet the new system's requirements.

Instantiate - 1. To represent an abstraction by a concrete instance (e.g., heroes instantiate ideals). 2. Within Ada, the process of creating an instance of a generic subprogram or package.

Line Replaceable Unit - A hardware unit that is part of an assembly that is defined to be the lowest replaceable element of a hardware component. An assembly is composed of one or more LRUs.

Management Control and Status Reports Document - One of the documents in the documentation set for an information system or component; it represents a "logical" home for all report and request forms.

Management Plan - One of the four documentation set documents; it encompasses all planning information for an information system or component, including management, engineering, and assurance planning.

Partitioning - The process of determining the content for each delivery when using the phased delivery approach, or for determining the content of each segment when using incremental development.

Phase (of a life-cycle) - A set of activities and associated products and reviews that make up one step of a multi-step process for developing systems and their component. An information system life-cycle has seven standard phases: 1) Concept and Initiation; 2) Requirements; 3) Design; 4) Implementation Coordination (or Implementation or Fabrication); 5) Integration and Test; 6) Acceptance Test; and 7) Sustaining Engineering and Operations. In some cases, phase 3 contains multiple levels of design, such as architectural and detailed.

Phase Transition Review - The review at the end of a phase triggering transition to the next phase.

Phased Delivery - The process of developing and delivering a product in stages, each providing an increasing capability for an information system or component. The process may be employed to provide an early operational capability to users, for budgetary reasons, or because of risk, size, or complexity. Each delivery must undergo acceptance testing prior to release for operational use. The capabilities provided in each delivery are determined by prioritizing and partitioning

the requirements. This must be documented in the requirements section of the product specification.

Preliminary Design Review - The phase transition review for the Architectural Design life-cycle phase.

Product Specification - One of the four documentation set documents for an information system or component; it encompasses all the engineering and technical support information related to the development of an information system or component.

Prototyping - A process used to explore alternatives and minimize risks. Prototyping can be used in any life-cycle phase. The product of the process is a report. By-products (such as software, hardware, and models) of the process can be preserved for subsequent use.

Provider - An organization providing a capability to an acquirer; e.g., the developer or an organization providing independent verification and validation.

Quality Assurance - A subset of the total assurance activities generally focused on conformance to standards and plans. In general, these assurance activities are conducted by the SRM&QA organization.

Quality Engineering - The process of incorporating reliability, maintainability, and other quality factors into system, hardware, software, and operational procedures products.

Repository - A collection of standards, procedures, guides, practices, rules, etc. that supplements information contained in the documentation set for an information system or component. In general, the documentation set describes "what" is to be done and the repository provides the "how-to" instructions. A repository usually contains information that is applicable to multiple information systems and components.

Requirements Allocation - The process of distributing requirements of an information system or component to subordinate information systems (subsystems) or components.

Requirements Partitioning - The process of distributing requirements of an information system or component to different deliveries in support of phased delivery.

Requirements Review - The phase transition review for the Requirements life-cycle phase.

Review Item Discrepancy - A type of discrepancy report used when reviewing documentation.

Risk - The combined effect of the likelihood of an unfavorable occurrence and the potential impact of that occurrence.

Risk Management - The process of assessing potential risks and reducing those risks within dollar, schedule, and other constraints.

Roll-out - A mechanism for recording sections of a document in physically separate volumes while maintaining traceability and links. When using roll-out, a volume is subordinate to a parent document or volume.

Software Management and Assurance Program - Sponsored by NASA Code Q to foster more effective and productive software engineering methodologies.

Subsystem - In the information system decomposition context, a subsystem is an information system that is subordinate to a higher level information system and is parent to software, hardware, and operational procedures components, or to other (lower level) information systems.

Template - Within these Standards, a template is a DID framework used in the roll-out process for defining the specific format of a section rolled-out into a physically separate volume.

Test Readiness Review - The phase transition review for the Integration and Testing life-cycle phase.

Testing - The process of exercising or evaluating an information system or component by manual or automated means to demonstrate that it satisfies specified requirements or to identify differences between expected and actual results.

Tool - A hardware device or computer program used to help develop, test, analyze, or maintain another device or computer program or its documentation. (IEEE Std 729-1983)

Unit - An identifiable part of a detailed design. A level of decomposition for the purpose of physical design and implementation for a software or hardware component.

Validation - 1) Assurance activities conducted to determine that the requirements for a product are correct; i.e. to build the right product. 2) (IEEE Std 729-1983) The process of evaluating software at the end of the software development process to ensure compliance with software requirements.

Verification - 1) Assurance activities conducted to determine that a product is being built correctly in accordance with design and requirements specifications; i.e., to build the product right. 2) (IEEE Std 729-1983) "The process of determining whether or not the products of a given phase of ... development ... fulfill the requirements established during the previous phase."

Volume - A physically separate section of one of the four documents in a documentation set.

10.0 NOTES

None.

11.0 APPENDICES

APPENDIX A

INFORMATION SYSTEM
PRODUCT SPECIFICATION DOCUMENT SAMPLE OUTLINE

EXPLANATORY NOTE

The purpose of a product specification for an information system is to document all the technical aspects relative to development of the information system throughout its life-cycle.

This sample outline contains the complete substructure of all the Section 7 DIDs "rolled-up" into a single volume product specification. All levels of substructure may not be required for a single-volume product specification.

A section of a product specification may be rolled-out, using the Product Specification Template (SMAP-DID-P999) and associated rules, into a separate volume as necessary for such reasons as assignment of the tasks generating the information in that section to a separate organization, documentation size and complexity, ease of configuration control, or phase of the life-cycle in which the information is generated.

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
INFORMATION SYSTEM PRODUCT SPECIFICATION SAMPLE OUTLINE

3.0 CONCEPT

3.1 Definition of Information System
3.1.1 Purpose and Scope
3.1.2 Goals and Objectives
3.1.3 Description
3.1.4 Policies
3.2 User Definition
3.3 Capabilities and Characteristics
3.4 Sample Operational Scenarios

4.0 REQUIREMENTS

4.1 Requirements Approach and Tradeoffs
4.2 External Interface Requirements
4.2.1 Interfaces
4.3 Requirements Specification
4.3.1 Process and Data Requirements
4.3.2 Performance and Quality Engineering Requirements
4.3.3 Safety Requirements
4.3.4 Security and Privacy Requirements
4.3.5 Implementation Constraints
4.3.6 Site Adaptation
4.3.7 Design Goals
4.4 Traceability to Parent's Design
4.5 Partitioning for Phased Delivery

5.0 DESIGN

5.1 Design Approach and Tradeoffs
5.2 External Interfaces Design
5.2.1 User Interfaces Design
5.2.2 Interface Allocation
5.3 Architectural Design
5.4 Requirements Allocation and Traceability
5.5 Partitioning for Incremental Development

6.0 VERSION DESCRIPTION

6.1 Product Description
6.2 Inventory and Product
6.2.1 Materials Released
6.2.2 Product Content
6.3 Change Status
6.3.1 Installed Changes
6.3.2 Waivers
6.3.3 Possible Problems and Known Errors

7.0 USER AND OPERATOR DOCUMENTATION

7.1 User's Guide
7.1.1 Overview of Purpose and Function
7.1.2 Installation and Initialization
7.1.3 Startup and Termination
7.1.4 Functions and their Operation
7.1.5 Error and Warning Messages
7.1.6 Recovery Steps
7.2 User's Training Materials
7.3 Operator's Training Materials

8.0 MAINTENANCE MANUAL

8.1 Problem Detection and Fault Isolation
8.2 Preventative Maintenance

9.0 ABBREVIATIONS AND ACRONYMS

10.0 GLOSSARY

11.0 NOTES

12.0 APPENDICES

PRODUCT SPECIFICATION DOCUMENTATION STANDARD
HARDWARE PRODUCT SPECIFICATION DOCUMENT SAMPLE OUTLINE

APPENDIX B

HARDWARE COMPONENT
PRODUCT SPECIFICATION DOCUMENT SAMPLE OUTLINE

EXPLANATORY NOTE

The purpose of a hardware component product specification is to document all the technical aspects relative to the development of this component of an information system throughout its life-cycle.

This sample outline contains the complete substructure of all the Section 7 DIDs "rolled-up" into a single volume product specification. All levels of substructure may not be required for a single-volume product specification.

A section of a product specification may be rolled-out, using the Product Specification Template (SMAP-DID-P999) and associated rules, into a separate volume as necessary for such reasons as assignment of the tasks generating the information in that section to a separate organization, documentation size and complexity, ease of configuration control, or phase of the life-cycle in which the information is generated.

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3.0 CONCEPT

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3.1.1 Purpose and Scope
3.1.2 Goals and Objectives

3.1.3 Description
3.1.4 Policies
3.2 User Definition
3.3 Capabilities and Characteristics
3.4 Sample Operational Scenarios

4.0 REQUIREMENTS

4.1 Requirements Approach and Tradeoffs
4.2 External Interface Requirements
4.2.1 Interfaces
4.3 Requirements Specification
4.3.1 Process Requirements
4.3.2 Performance and Quality Engineering Requirements
4.3.3 Safety Requirements
4.3.4 Security and Privacy Requirements
4.3.5 Implementation Constraints
4.3.6 Site Adaptation
4.3.7 Design Goals
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5.0 DESIGN

5.1 Architectural Design
5.1.1 Design Approach and Tradeoffs
5.1.2 Architectural Design Description
5.1.3 External Interface Design
5.1.3.1 Interface Design
5.1.3.2 Interface Allocation
5.1.4 Requirements Allocation and Traceability
5.1.5 Partitioning for Incremental Development
5.2 Detailed Design
5.2.1 Detailed Design Approach and Tradeoffs
5.2.2 Detailed Design Description
5.2.2.1 Assembly Design and Traceability to Architectural Design
5.2.2.2 Detailed Design of Assemblies
5.2.3 External Interface Detailed Design
5.2.3.1 Interface Allocation Design
5.2.3.2 Physical Interface Design
5.2.4 Fabrication Notes

6.0 VERSION DESCRIPTION

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6.3.3 Possible Problems and Known Errors

7.0 USER DOCUMENTATION

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8.0 MAINTENANCE MANUAL

8.1 Problem Detection and Fault Isolation
8.2 Preventative Maintenance

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
SOFTWARE PRODUCT SPECIFICATION DOCUMENT SAMPLE OUTLINE

APPENDIX C

SOFTWARE COMPONENT PRODUCT SPECIFICATION DOCUMENT SAMPLE OUTLINE

EXPLANATORY NOTE

The purpose of a software component product specification is to document all the technical aspects relative to the development of this component of an information system throughout its life-cycle.

This sample outline contains the complete substructure of all the Section 7 DIDs "rolled-up" into a single volume product specification. All levels of substructure may not be required for a single-volume product specification.

A section of a product specification may be rolled-out, using the Product Specification Template (SMAP-DID-P999) and associated rules, into a separate volume as necessary for such reasons as assignment of the tasks generating the information in that section to a separate organization, documentation size and complexity, ease of configuration control, or phase of the life-cycle in which the information is generated.

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2.1 Parent Documents
2.2 Applicable Documents
2.3 Information Documents

3.0 CONCEPT

3.1 Definition of Software
3.1.1 Purpose and Scope
3.1.2 Goals and Objectives

3.1.3 Description
3.1.4 Policies
3.2 User Definition
3.3 Capabilities and Characteristics
3.4 Sample Operational Scenarios

4.0 REQUIREMENTS

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APPENDIX D

OPERATIONAL PROCEDURES COMPONENT PRODUCT SPECIFICATION DOCUMENT SAMPLE OUTLINE

EXPLANATORY NOTE

The purpose of an operational procedures component product specification is to document all the technical aspects relative to the development of this component of an information system throughout its life-cycle.

This sample outline contains the complete substructure of all the Section 7 DIDs "rolled-up" into a single volume product specification. All levels of substructure may not be required for a single-volume product specification. Usually, the operational procedures manual (section 6.2.2 here) is rolled-out into a physically separate volume.

A section of a product specification may be rolled-out, using the Product Specification Template (SMAP-DID-P999) and associated rules, into a separate volume as necessary for such reasons as assignment of the tasks generating the information in that section to a separate organization, documentation size and complexity, ease of configuration control, or phase of the life-cycle in which the information is generated.

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OPERATIONAL PROCEDURES PRODUCT SPECIFICATION SAMPLE OUTLINE

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3.1.2 Goals and Objectives
3.1.3 Description
3.1.4 Policies
3.2 User Definition
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4.0 REQUIREMENTS

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5.1 Design Approach and Tradeoffs
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6.0 VERSION DESCRIPTION

6.1 Product Description
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6.2.2 Operational Procedures Manual (usually rolled-out)
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STANDARDS AND GUIDELINES PRODUCT SPECIFICATION DOCUMENT SAMPLE OUTLINE

EXPLANATORY NOTE

The purpose of a standards and guidelines product specification is to document all the technical aspects relative to the development of a new standard including the documenting of the standard itself.

This sample outline contains the complete substructure of all the Section 7 DIDs "rolled-up" into a single volume product specification. All levels of substructure may not be required for a single-volume product specification. Usually, the standards and associated guidelines (section 6.2.2 here) are rolled-out into a physically separate volume.

A section of a product specification may be rolled-out, using the Product Specification Template (SMAP-DID-M999) and associated rules, into a separate volume as necessary for such reasons as assignment of the tasks generating the information in that section to a separate organization, documentation size and complexity, ease of configuration control, or phase of the life-cycle in which the information is generated.

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PRODUCT SPECIFICATION DOCUMENTATION STANDARD
STANDARDS AND GUIDELINES PRODUCT SPECIFICATION SAMPLE OUTLINE

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3.1 Definition of Standards
3.1.1 Purpose and Scope
3.1.2 Goals and Objectives
3.1.3 Description
3.1.4 Policies
3.2 User Definition
3.3 Capabilities and Characteristics
3.4 Sample Operational Scenarios

4.0 REQUIREMENTS

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